

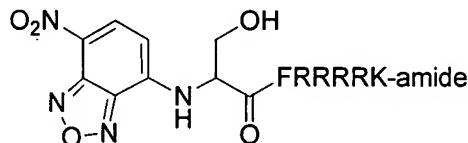
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Amendments to the Claims:

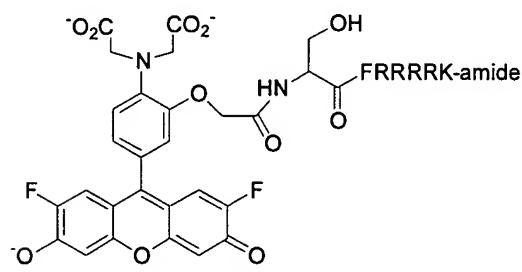
Please amend Claims 56, 57 and 59-62, and add new Claim 148 as set forth below.

1-48. (Canceled)

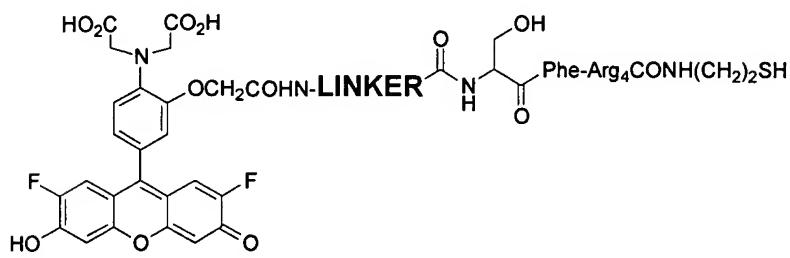
49. (Previously presented) A substrate for a protein kinase, wherein the substrate is selected from the group consisting of:



,



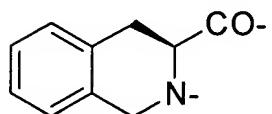
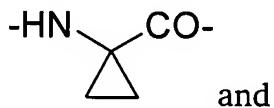
, and



;

wherein F is phenylalanine, K is lysine, and R is arginine; and wherein the LINKER is selected from the group consisting of N-methyl glycine, L-proline, D-proline,

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50-55. (Canceled)

56. (Currently amended) A substrate for a protein kinase, wherein the substrate comprises:

a peptide substrate for the protein kinase, wherein the peptide comprises a serine, a threonine, or a tyrosine on a terminal end of the peptide;

at least one fluorophore, wherein a fluorophore is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide; and

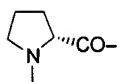
~~a photolabile side chain attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide, wherein the photolabile side chain blocks transfer of a phosphoryl group from adenosine triphosphate to a hydroxyl moiety of the serine, the threonine, or the tyrosine so that the substrate cannot be phosphorylated by a protein kinase until the photolabile side chain is removed from the substrate; and~~

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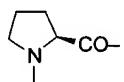
wherein the photolabile side chain comprises the structure



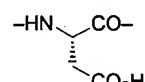
or a fluorophore is attached to the peptide by a linker selected from the group consisting of



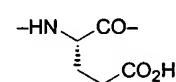
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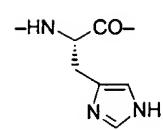
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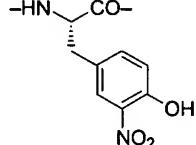
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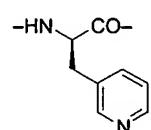
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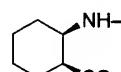
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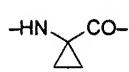
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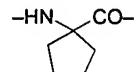
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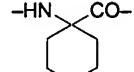
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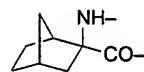
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j

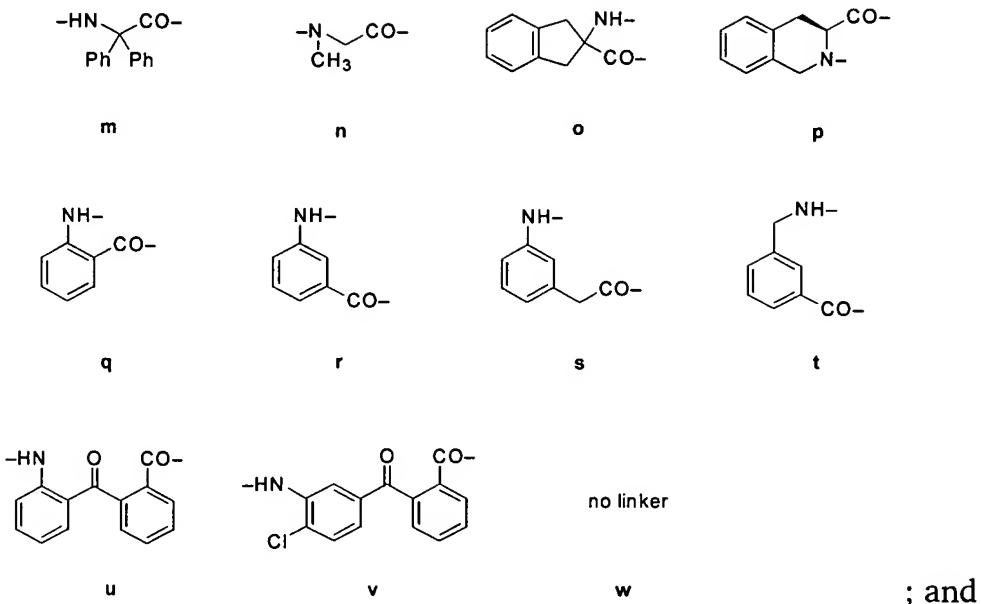


k



l

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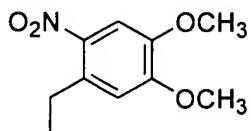
wherein

- (i) the substrate is specific for a protein kinase subtype,
- (ii) the fluorophore is attached to the C-terminal end of the peptide,
- (iii) a fluorophore is attached to each terminal end of the peptide,
- (iv) a first fluorophore is attached to a terminal end of the peptide and a second fluorophore, with photophysical properties distinct from the first fluorophore, is attached to any nonterminal site on the peptide,
- (v) the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative,
- (vi) the fluorophore is attached to the peptide by a linker selected from the group consisting of a carboxamide linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker, and/or
- (vii) the substrate further comprises a carbohydrate, a lipid or a nucleic acid.

57. (Currently amended) The substrate of claim 148, 56, wherein the photolabile

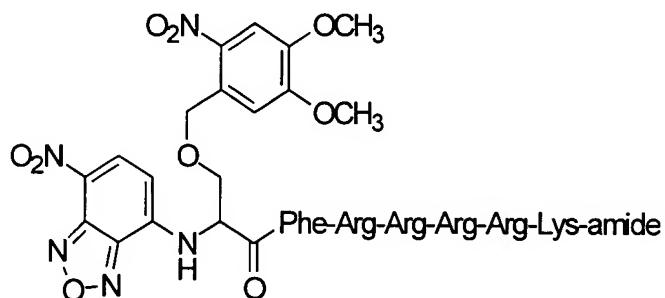
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side chain comprises the structure



58. (Original) The substrate of claim 56, wherein the substrate comprises a serine with a photolabile side chain that blocks phosphoryl transfer.

59. (Currently amended) The substrate of claim 56, 58, wherein the substrate has the structure



60. (Currently amended) The substrate of claim 148, 56, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% change in fluorescence intensity.

61. (Currently amended) The substrate of claim 148, 56, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces

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at least a 20% increase in fluorescence intensity.

62. (Currently amended) The substrate of claim 148, 56, wherein after removal of the photolabile side chain, phosphorylation by a protein kinase of the terminal serine, the terminal threonine, or the terminal tyrosine to which the fluorophore is attached produces at least a 20% decrease in fluorescence intensity.

63. (Previously presented) The substrate of claim 60, wherein phosphorylation of the substrate by the protein kinase produces at least a 70% change in fluorescence intensity.

64. (Original) The substrate of claim 63, wherein phosphorylation of the substrate by the protein kinase produces at least a 100% change in fluorescence intensity.

65. (Original) The substrate of claim 64, wherein phosphorylation of the substrate by the protein kinase produces at least a 150% change in fluorescence intensity.

66. (Original) The substrate of claim 65, wherein phosphorylation of the substrate by the protein kinase produces at least a 250% change in fluorescence intensity.

67. (Previously presented) The substrate of claim 56, wherein the substrate is specific for a protein kinase subtype.

68. (Original) The substrate of claim 67, wherein the substrate is specific for protein kinase C.

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69. (Original) The substrate of claim 68, wherein the substrate is specific for isoforms α , β , and γ of protein kinase C.

70. (Withdrawn) The substrate of claim 67, wherein the substrate is specific for protein kinase A, protein kinase B, protein kinase D, protein kinase G, $\text{Ca}^{+}/\text{calmodulin}$ -dependent protein kinase, mitogen-activated protein kinase, protein kinase mos, protein kinase raf, protein tyrosine kinase, tyrosine kinase abl, tyrosine kinase src, tyrosine kinase yes, tyrosine kinase fps, tyrosine kinase met, cyclin-dependent protein kinase, or cdc2 kinase.

71. (Previously presented) The substrate of claim 56, wherein the substrate further comprises a carbohydrate, a lipid or a nucleic acid.

72. (Canceled)

73. (Previously presented) The substrate of claim 56, wherein the fluorophore is attached to the C-terminal end of the peptide.

74. (Previously presented) The substrate of claim 56, wherein the fluorophore is attached to the N-terminal end of the peptide.

75. (Previously presented) The substrate of claim 56, wherein a fluorophore is attached to each terminal end of the peptide.

76. (Original) The substrate of claim 75, wherein fluorophores with distinct photophysical properties are attached to different terminal ends of the peptide.

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77. (Previously presented) The substrate of claim 56, wherein a first fluorophore is attached to a terminal end of the peptide and a second fluorophore, with photophysical properties distinct from the first fluorophore, is attached to any nonterminal site on the peptide.

78. (Previously presented) The substrate of claim 56, wherein the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative.

79. (Withdrawn) The substrate of claim 56, wherein the fluorophore is a fluorescein derivative.

80. (Withdrawn) The substrate of claim 56, wherein the fluorophore is selected from the group consisting of a dansyl derivative, an acridine derivative, an Alexa Fluor derivative, a BODIPY derivative, an Oregon Green derivative, a Rhodamine Green derivative, a Rhodamine Red-X derivative, a Texas Red derivative, a Cascade Blue derivative, a Cascade Yellow derivative, a Marina Blue derivative, a Pacific Blue derivative, an AMCA-X derivative, and a coumarin derivative.

81. (Canceled)

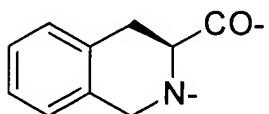
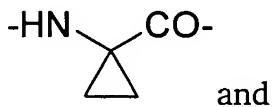
82. (Withdrawn) The substrate of claim 56, wherein the fluorophore is attached to the peptide by a metal chelating linker.

83. (Previously presented) The substrate of claim 56, wherein the fluorophore is attached to the peptide by a linker selected from the group consisting of a carboxamide

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linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker.

84. (Withdrawn) The substrate of claim 56, wherein the fluorophore is attached to the peptide by a linker selected from the group consisting of N-methyl glycine, L-proline, D-proline,



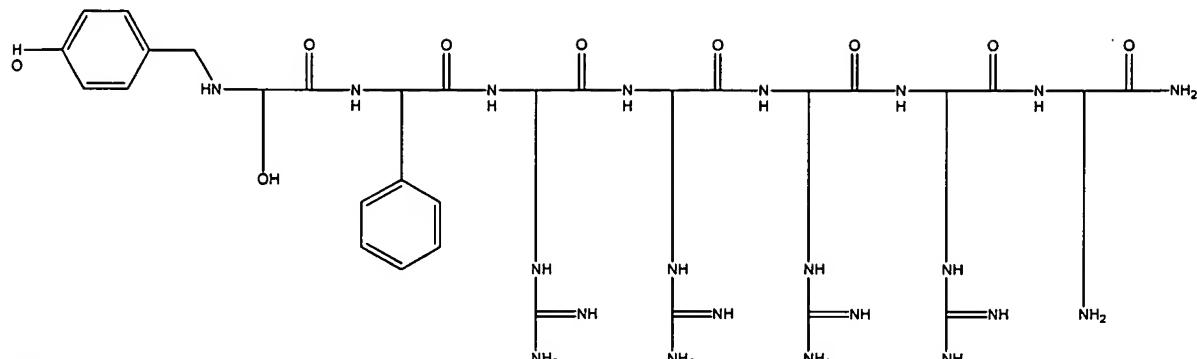
85. (Canceled)

86. (Previously presented) A composition comprising the substrate of claim 56, and a carrier.

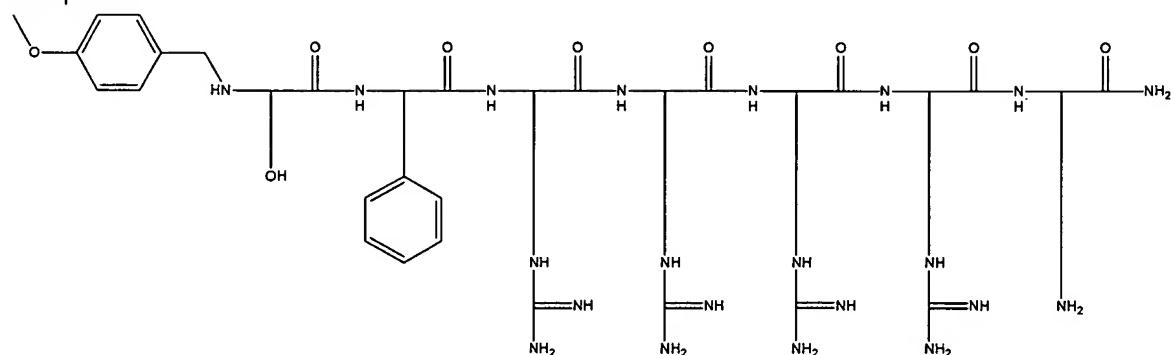
87. (Original) The composition of claim 86, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

88. (Previously presented) A chemical compound selected from the group of compounds consisting of:

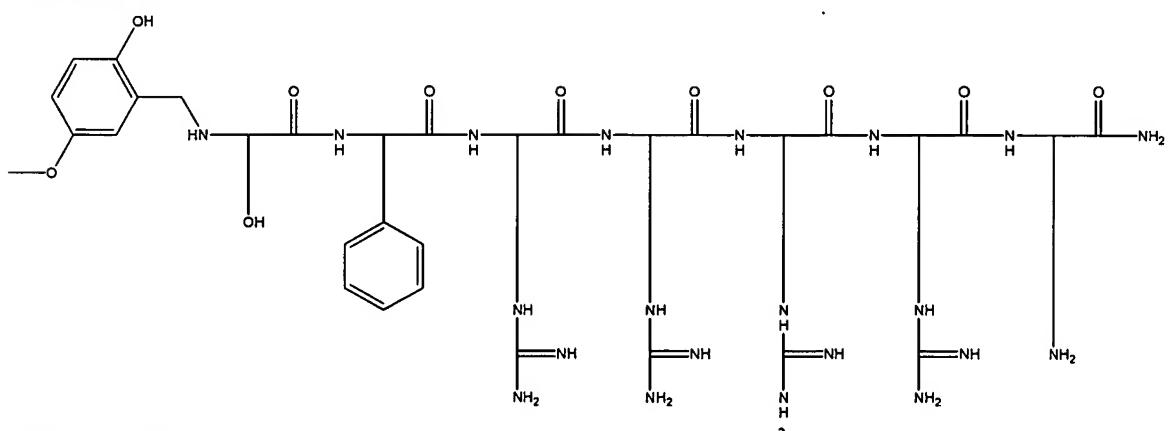
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Compound 1

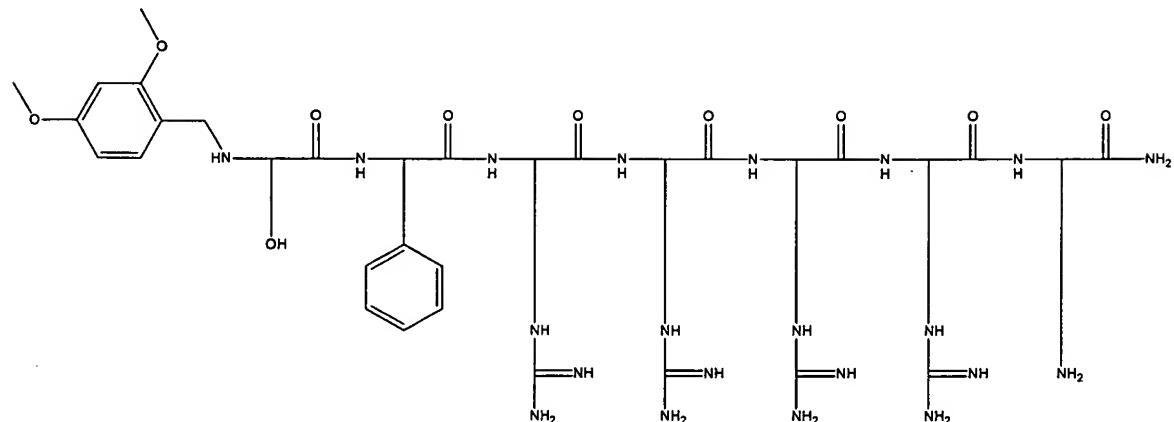


Compound 2

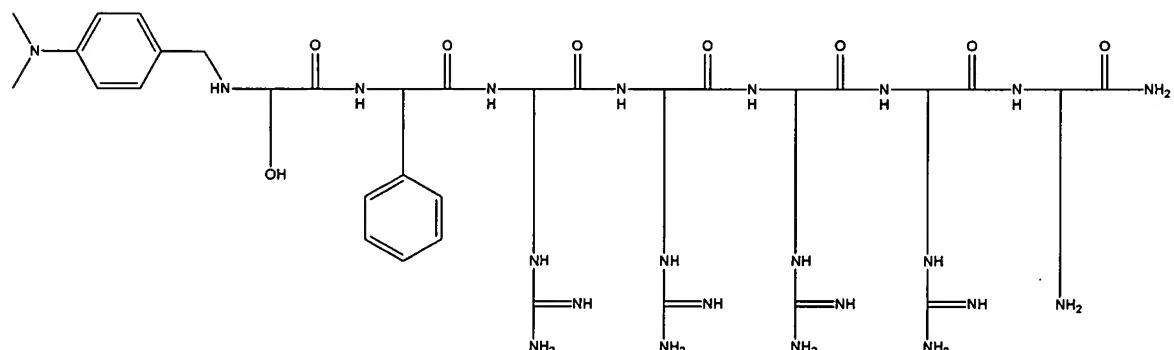


Compound 3

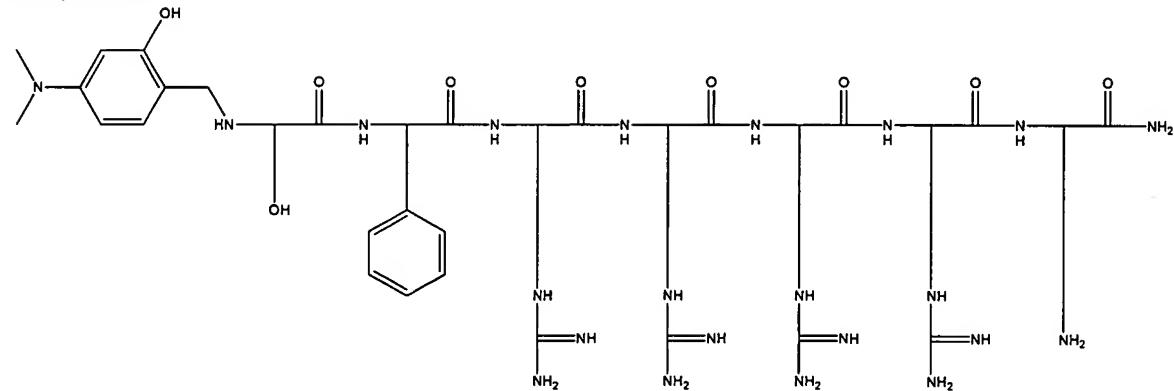
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Compound 4

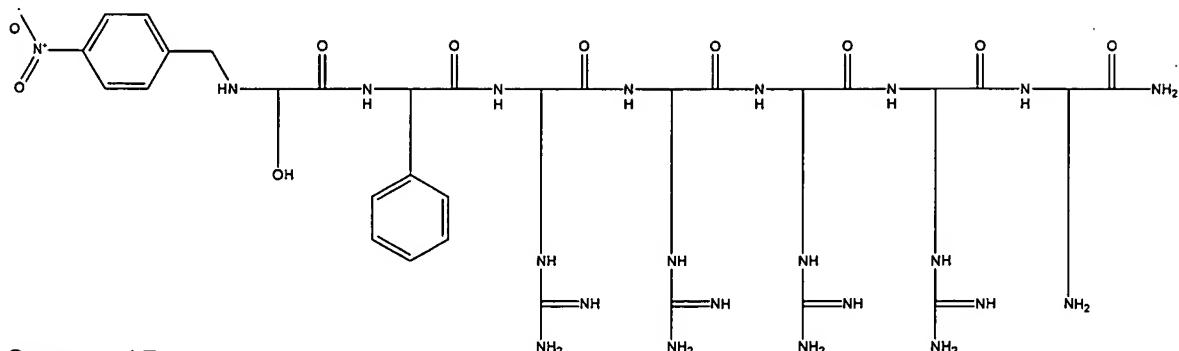


Compound 5

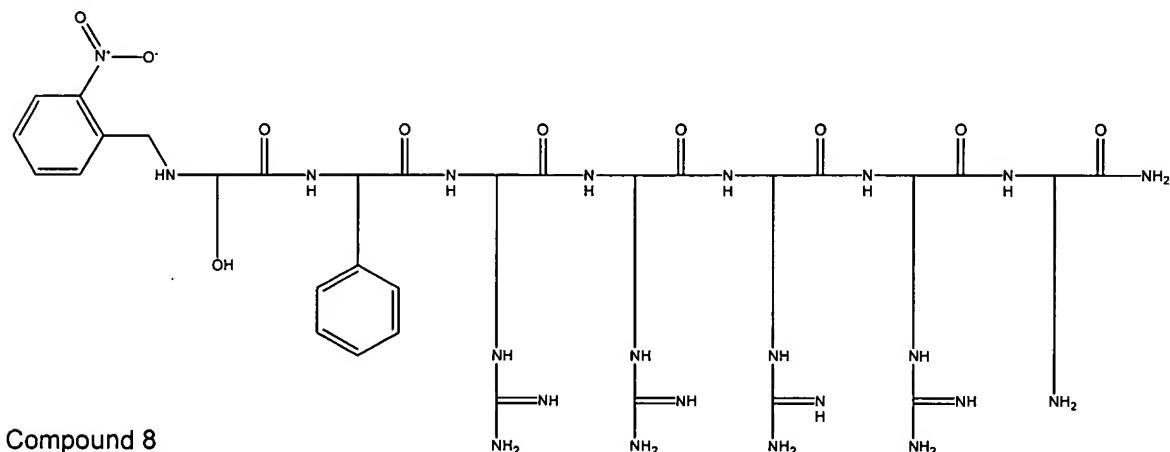


Compound 6

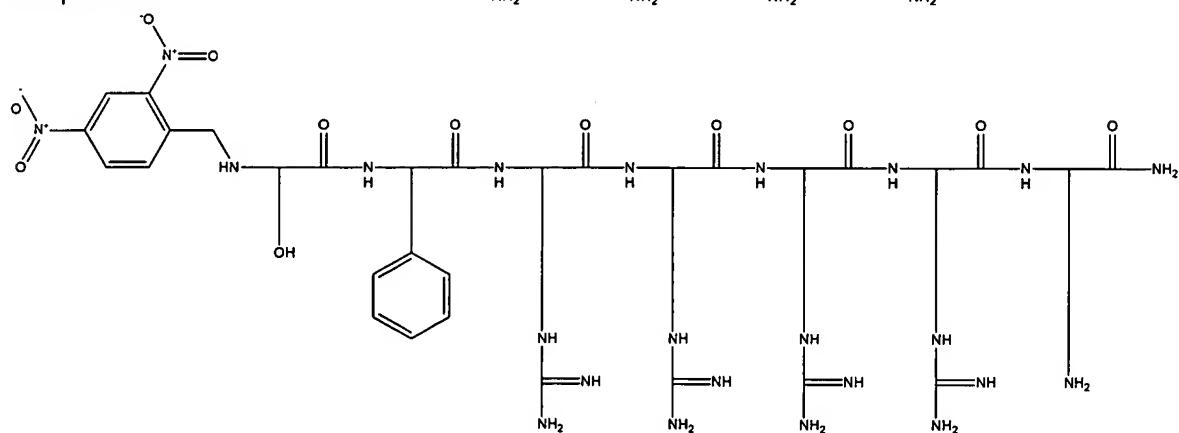
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Compound 7

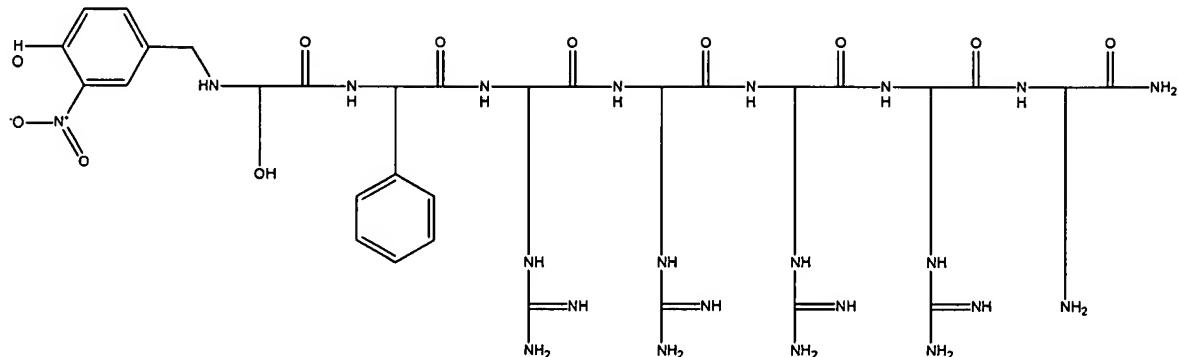


Compound 8

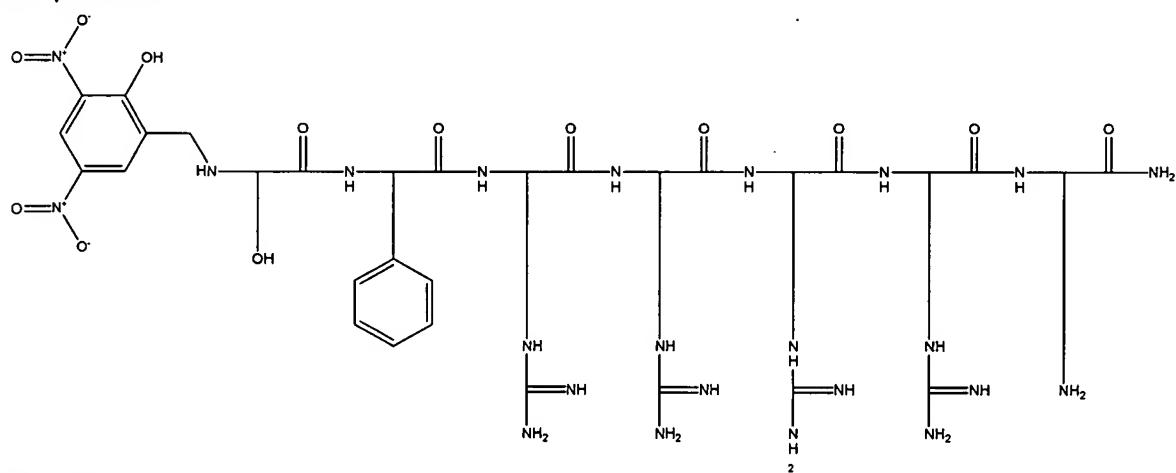


Compound 9

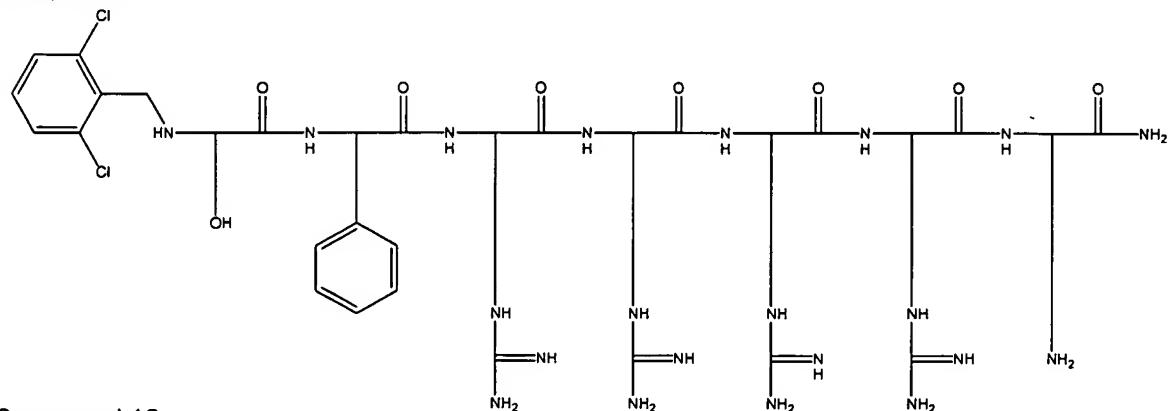
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Compound 10

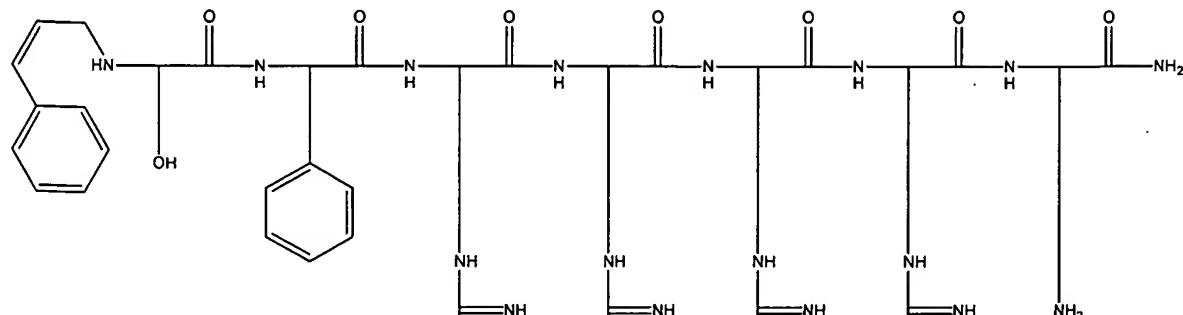


Compound 11

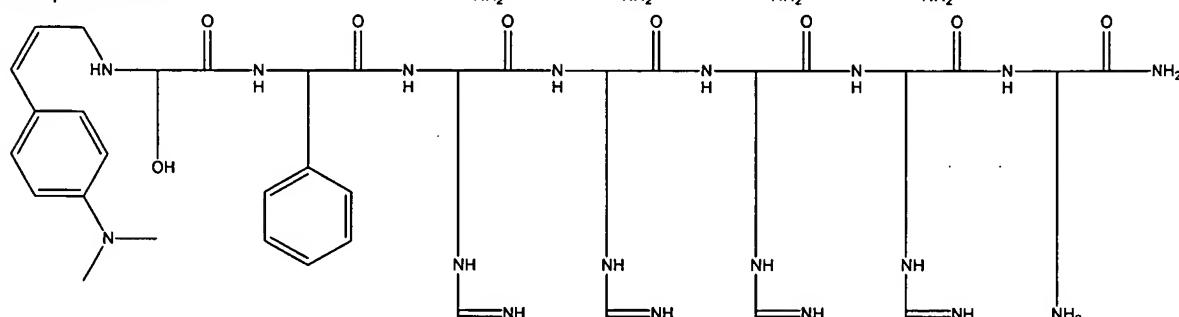


Compound 12

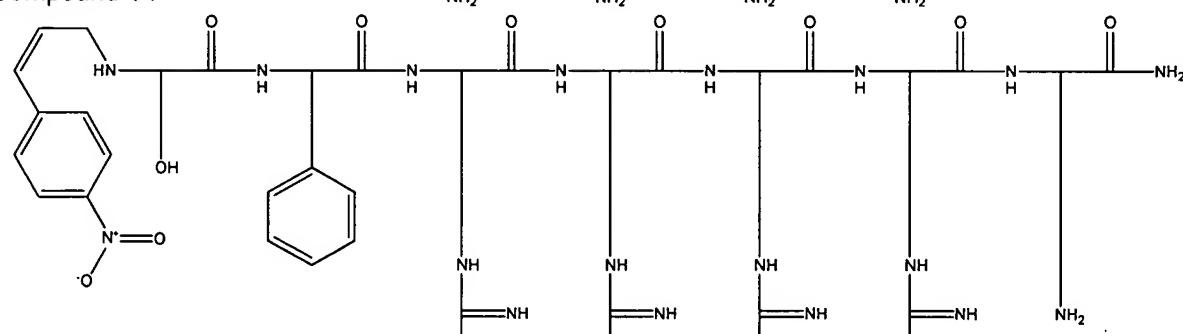
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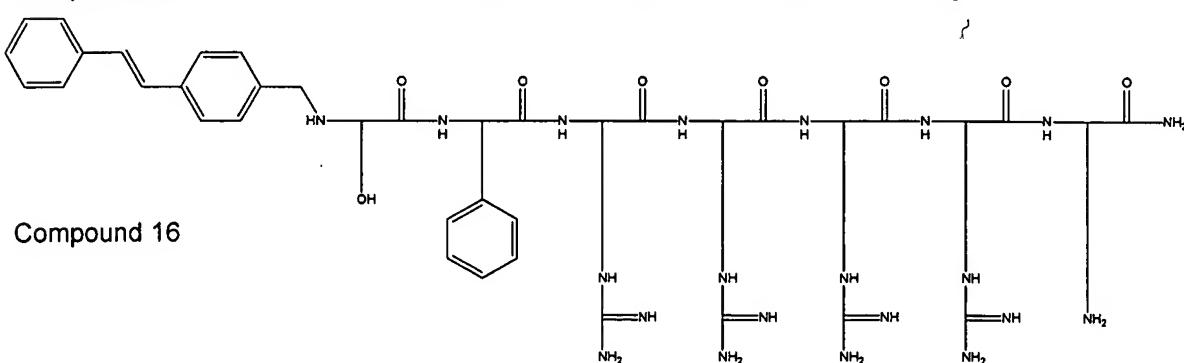
Compound 13



Compound 14

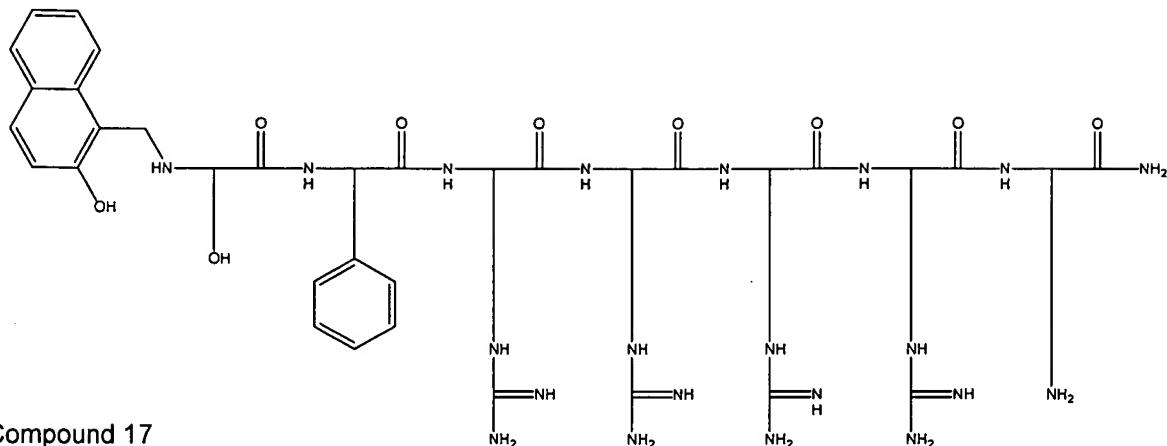


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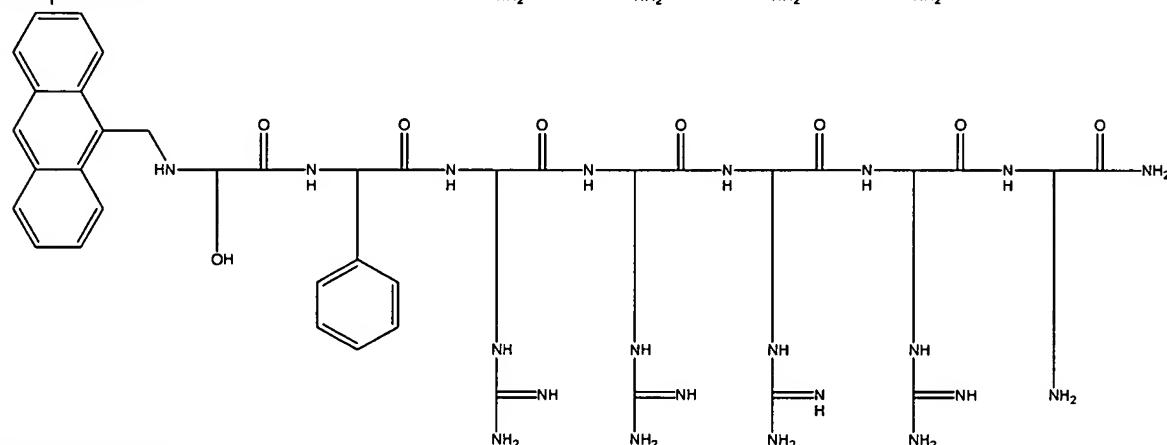


Compound 16

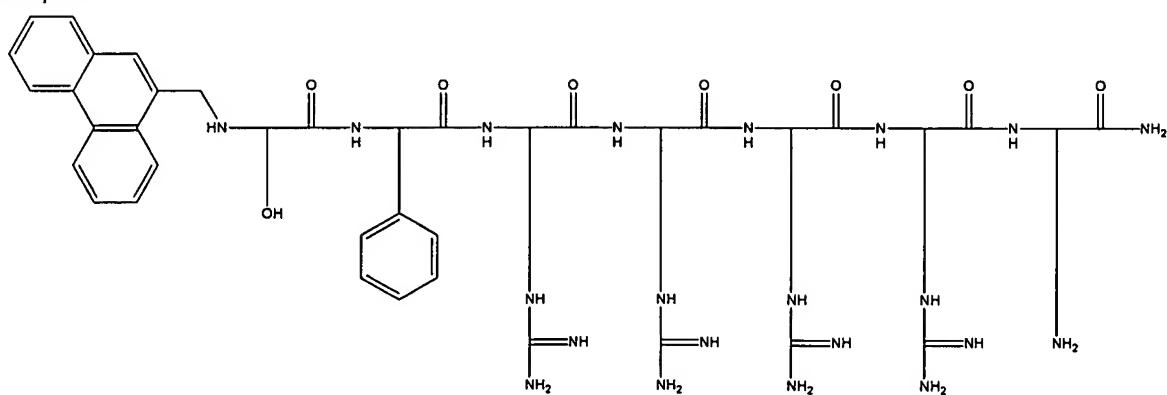
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Compound 17

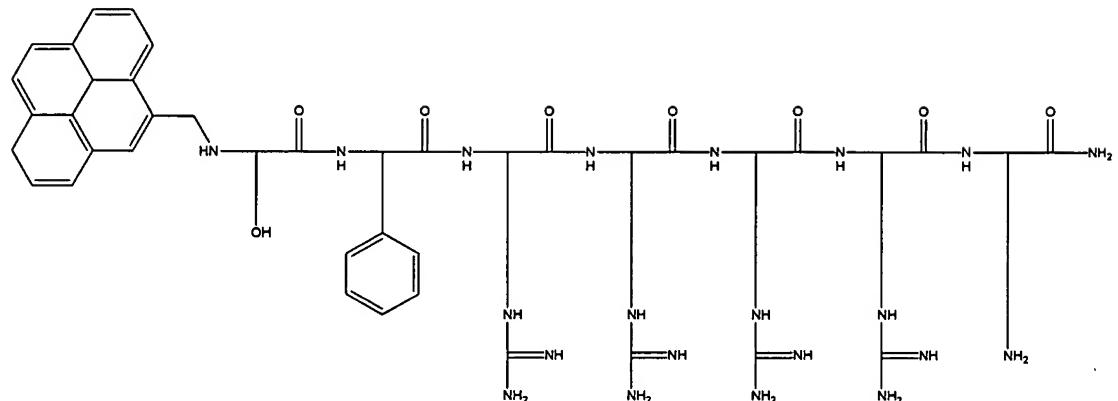


Compound 18

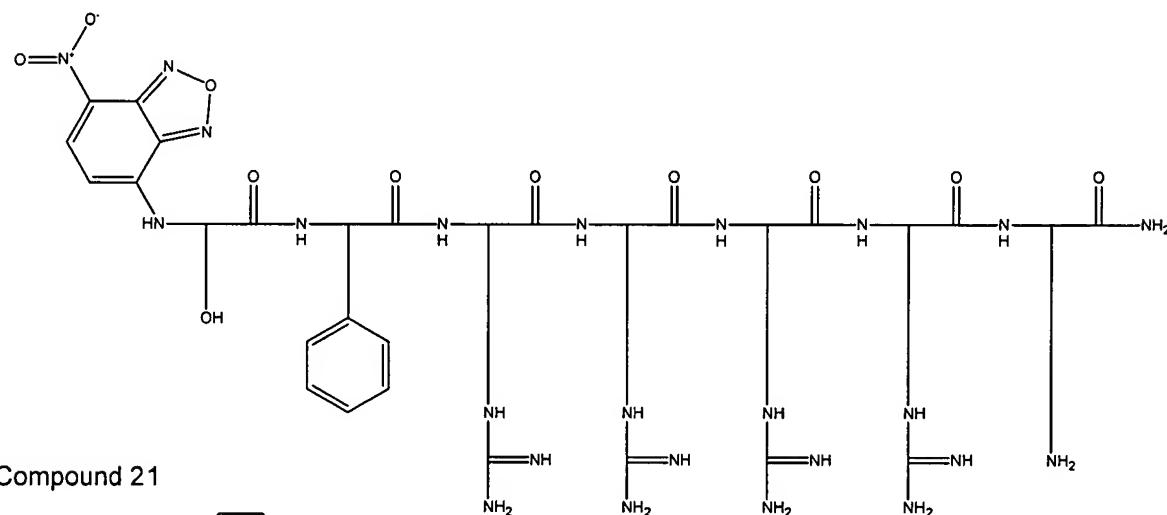


Compound 19

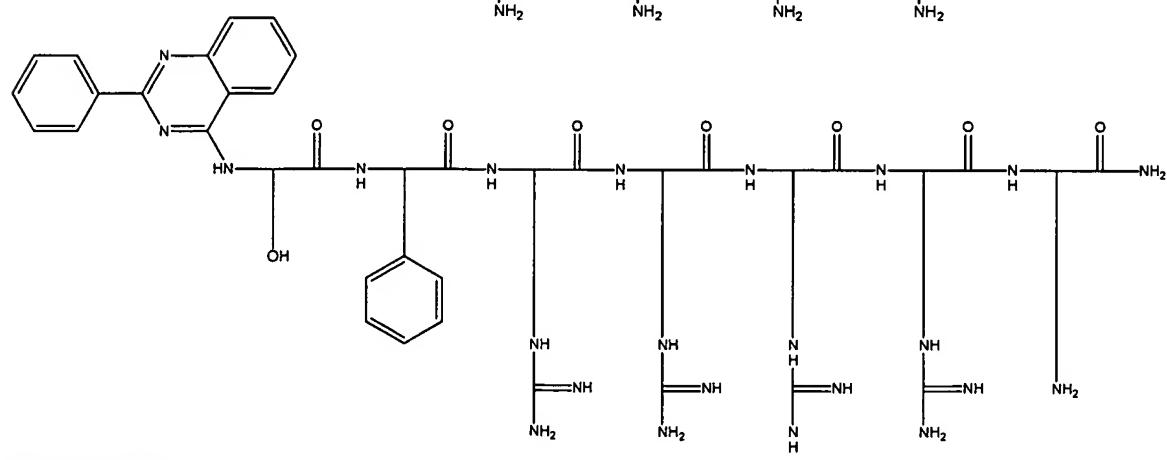
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Compound 20

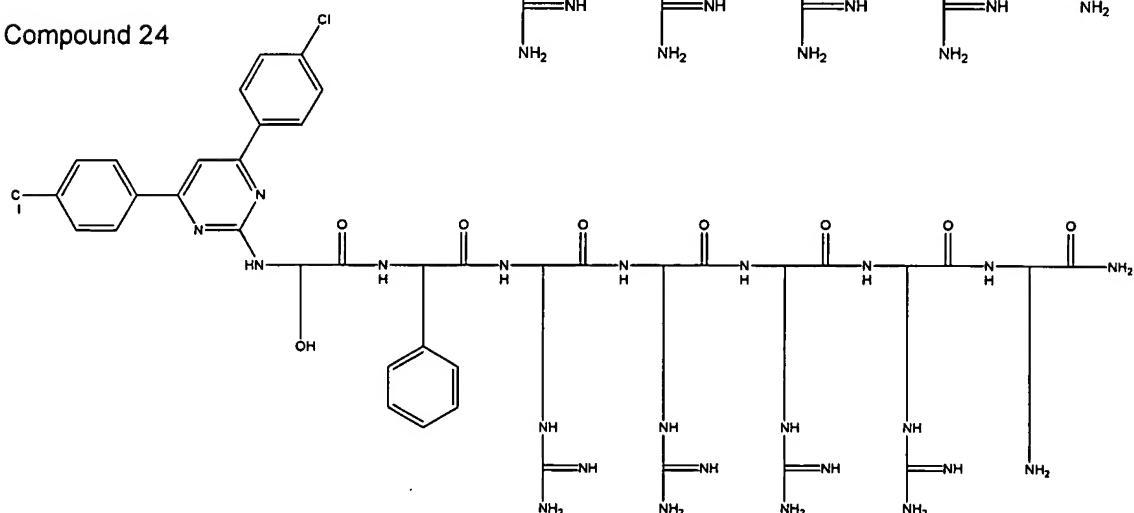
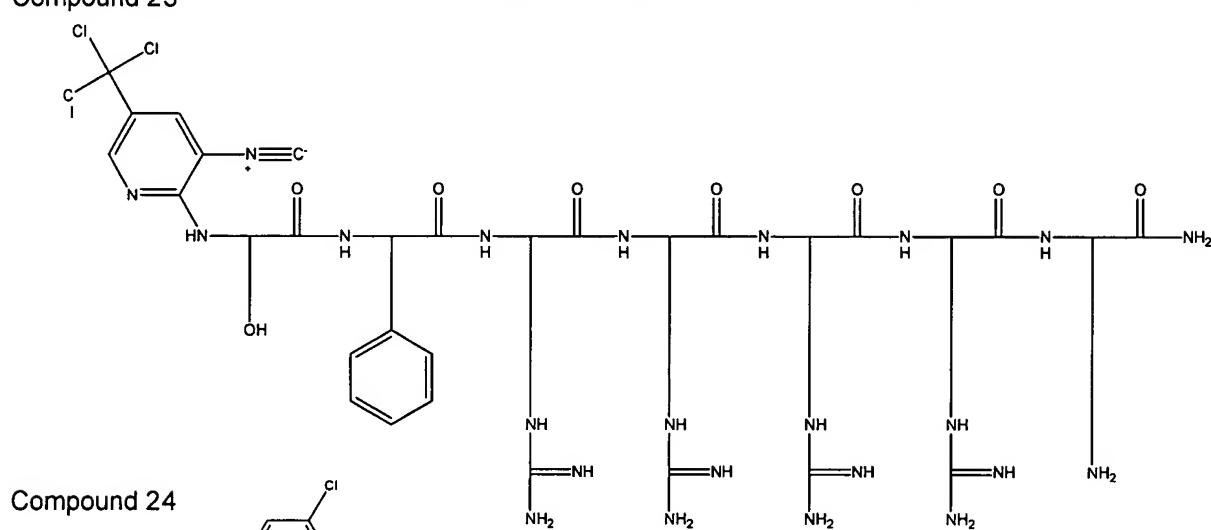
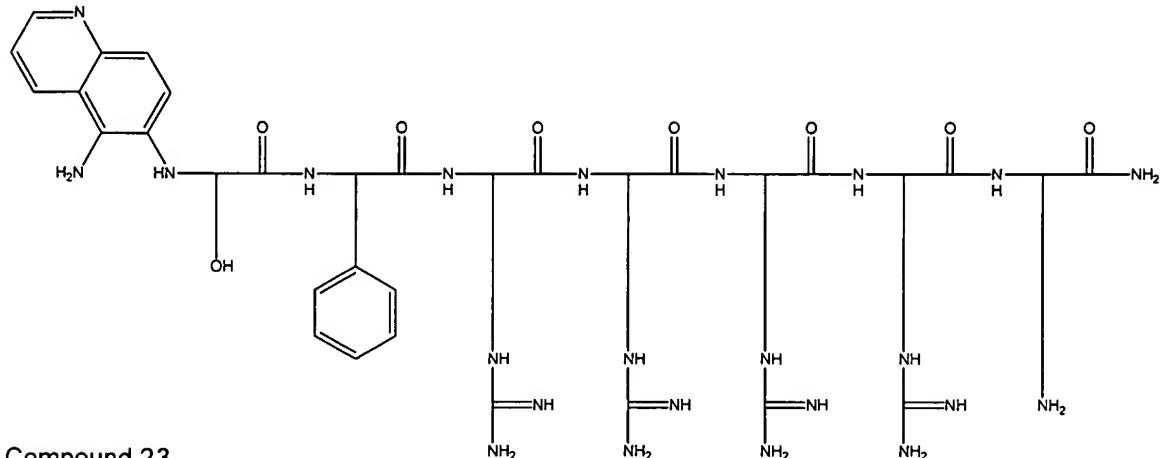


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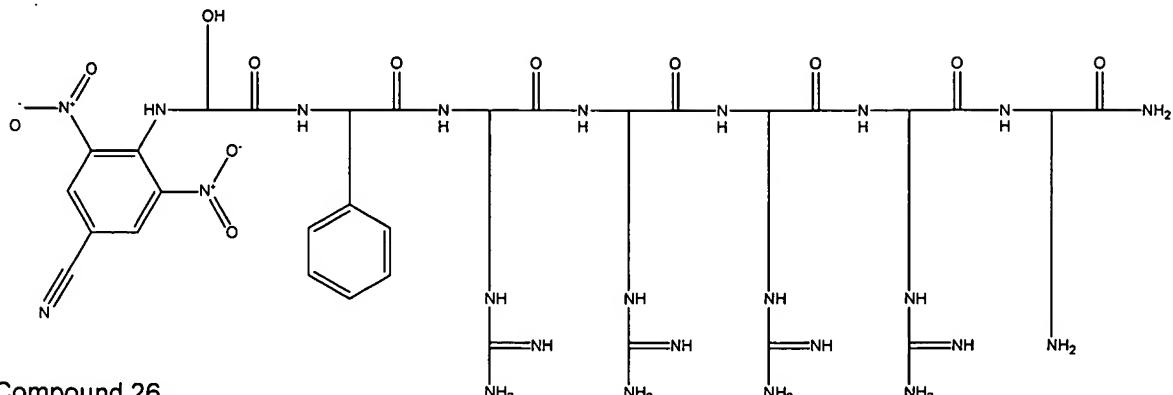


Compound 22

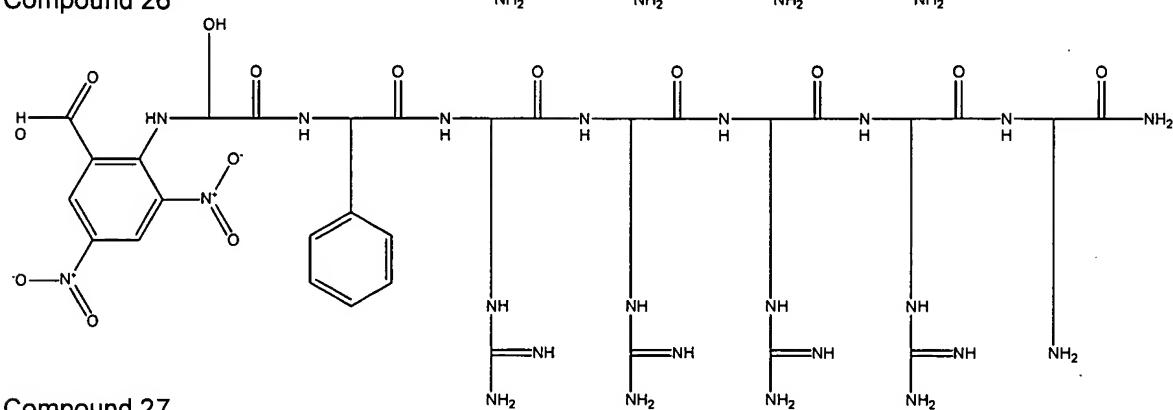
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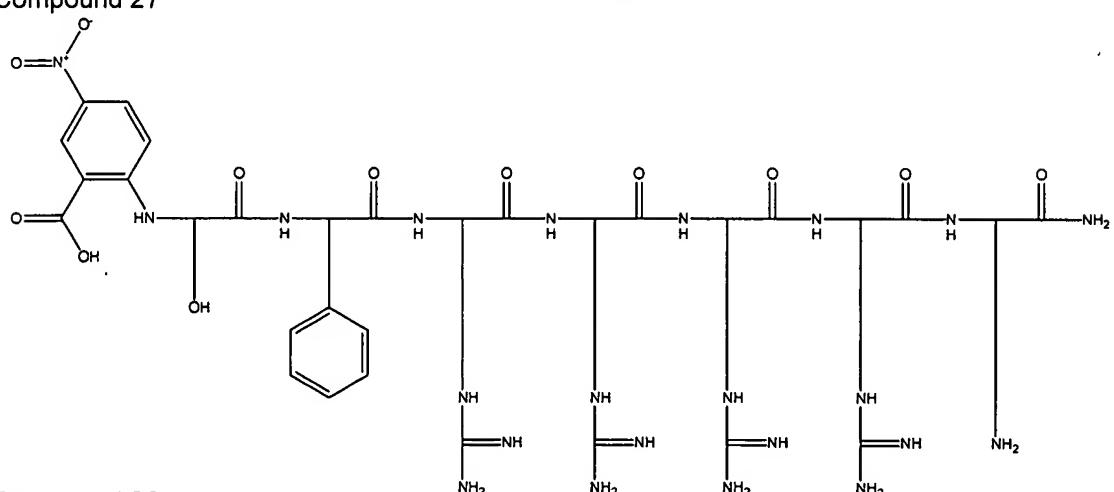
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Compound 26

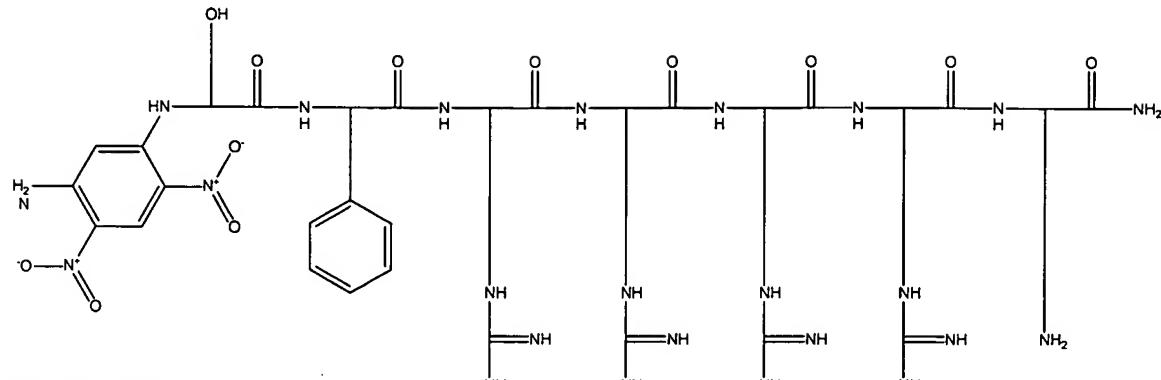


Compound 27

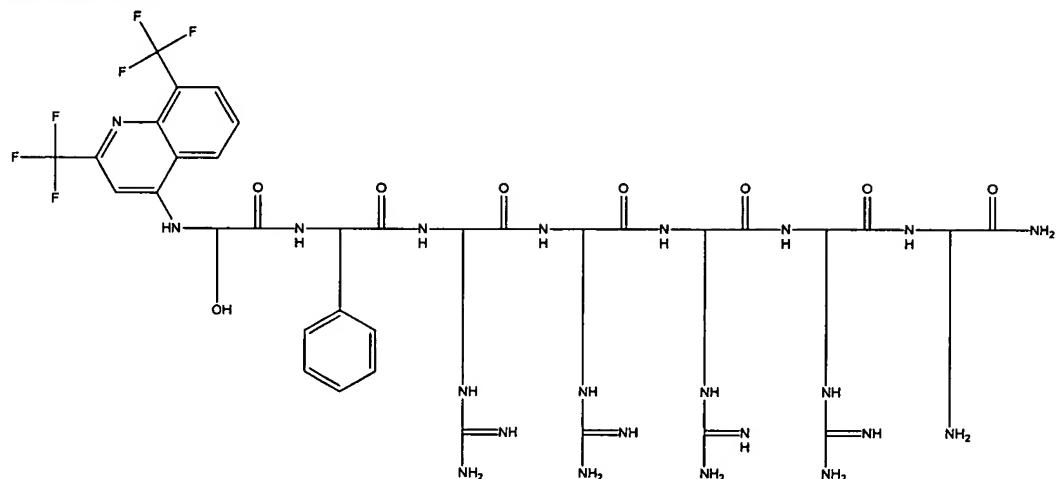


Compound 28

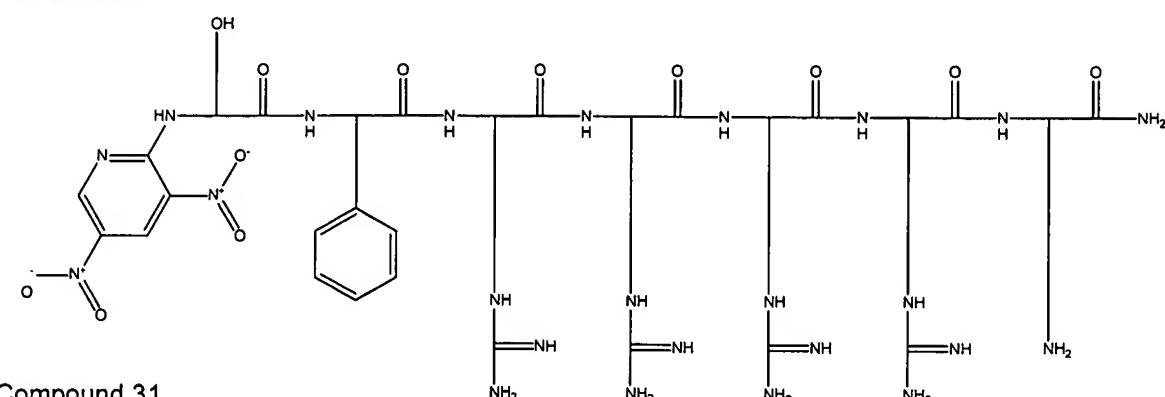
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Compound 29

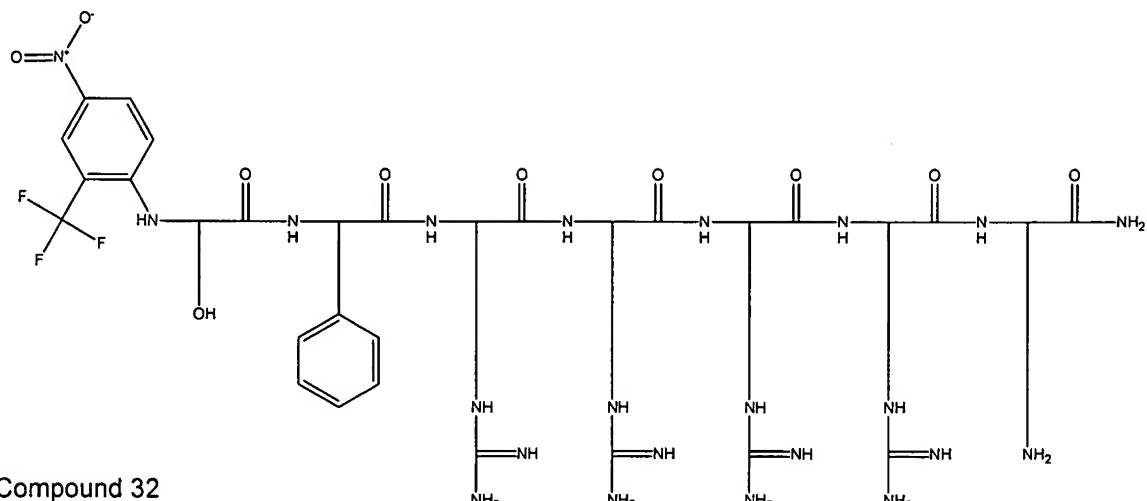


Compound 30

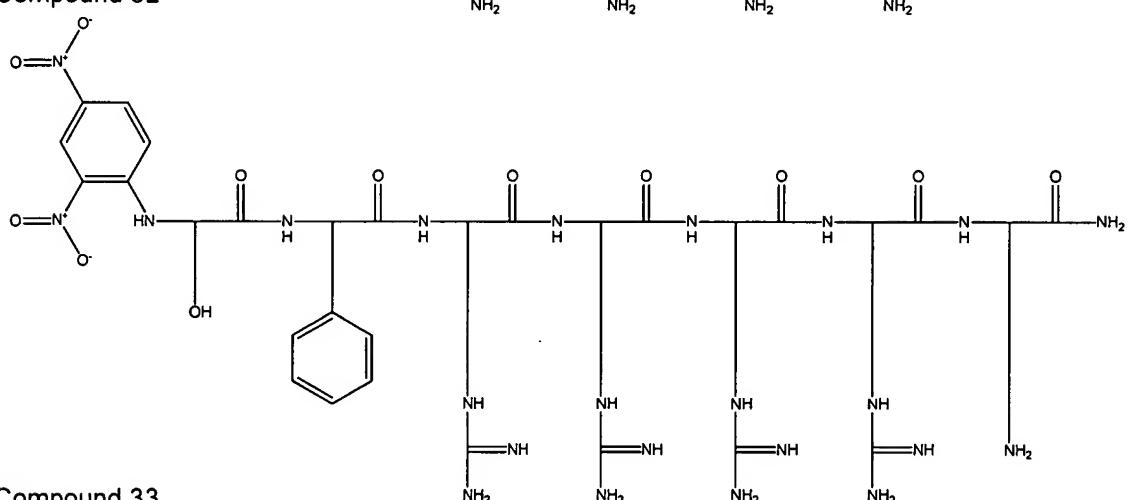


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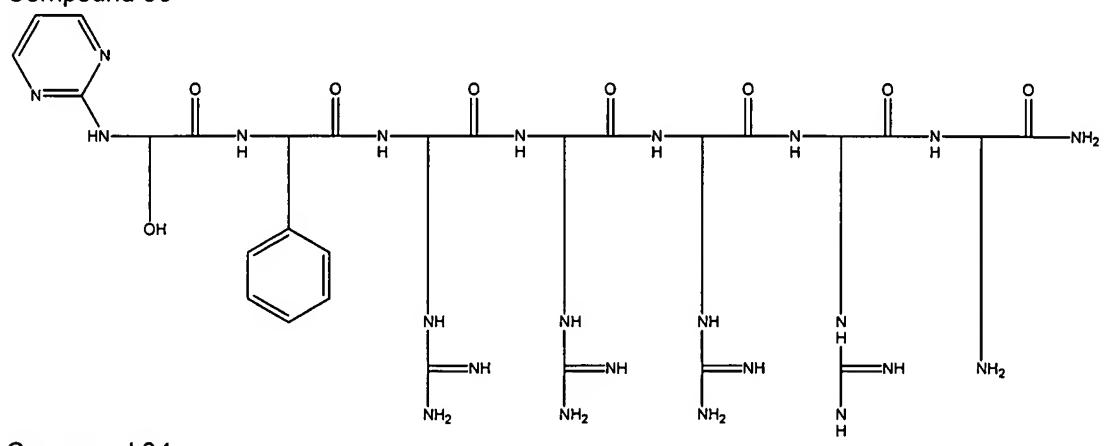
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Compound 32

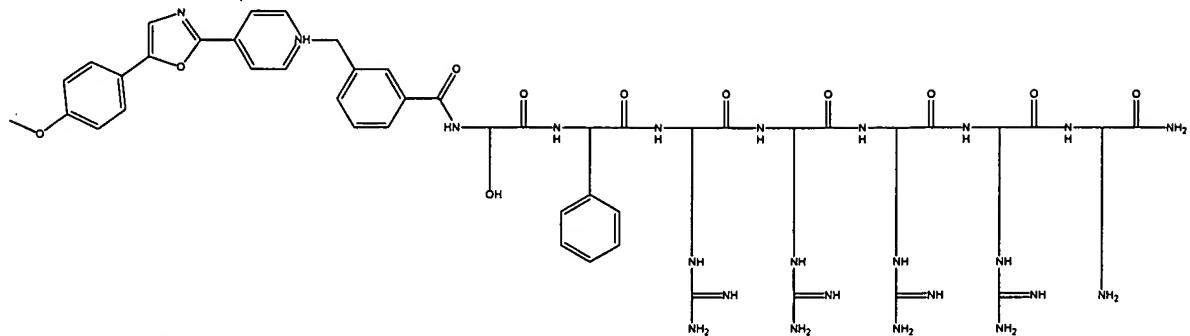


Compound 33

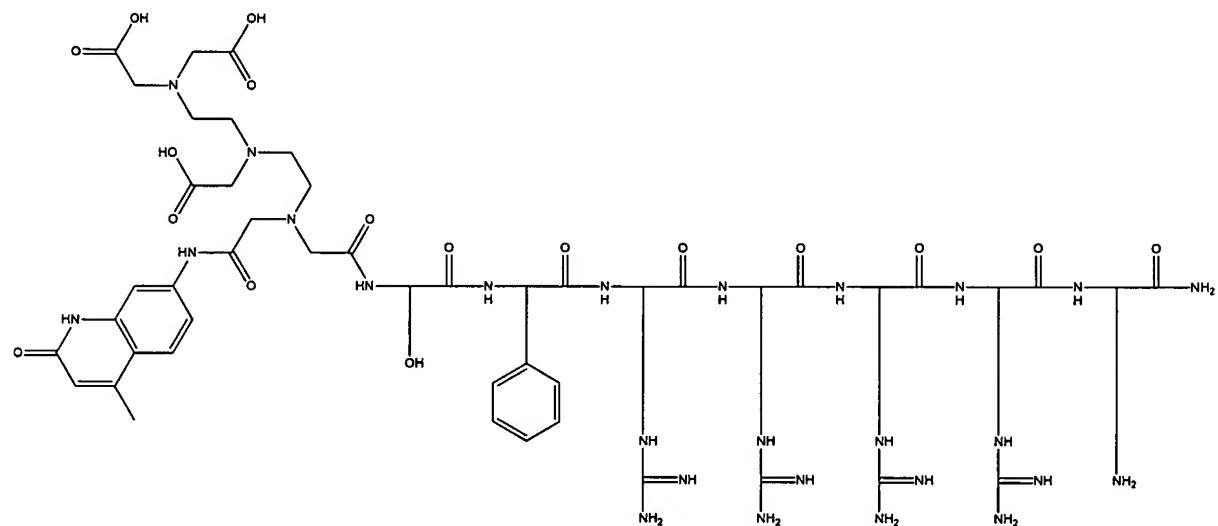


Compound 34

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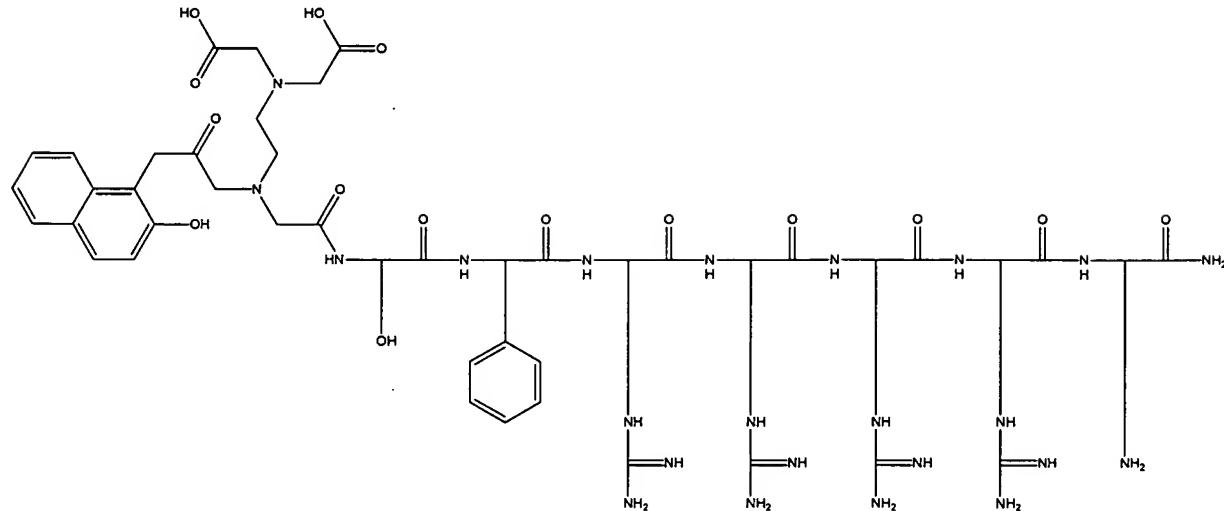


Compound 35

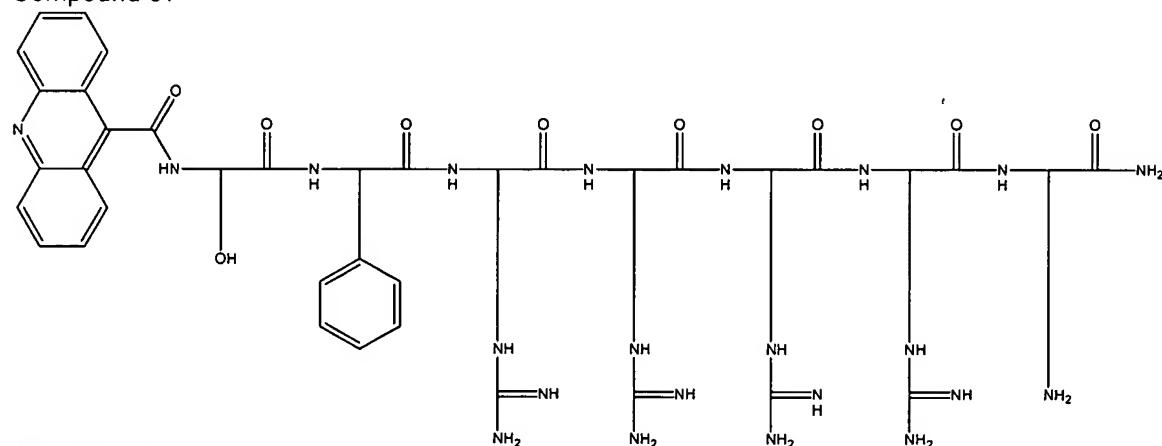


Compound 36

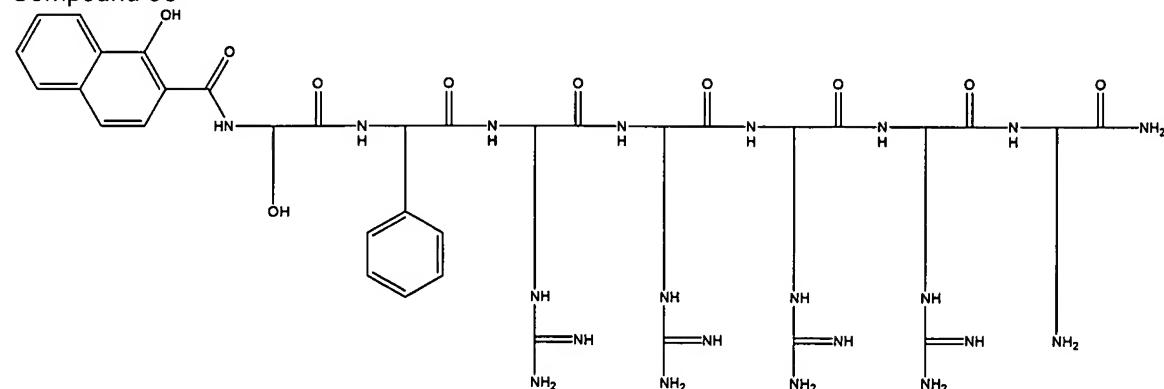
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Compound 37

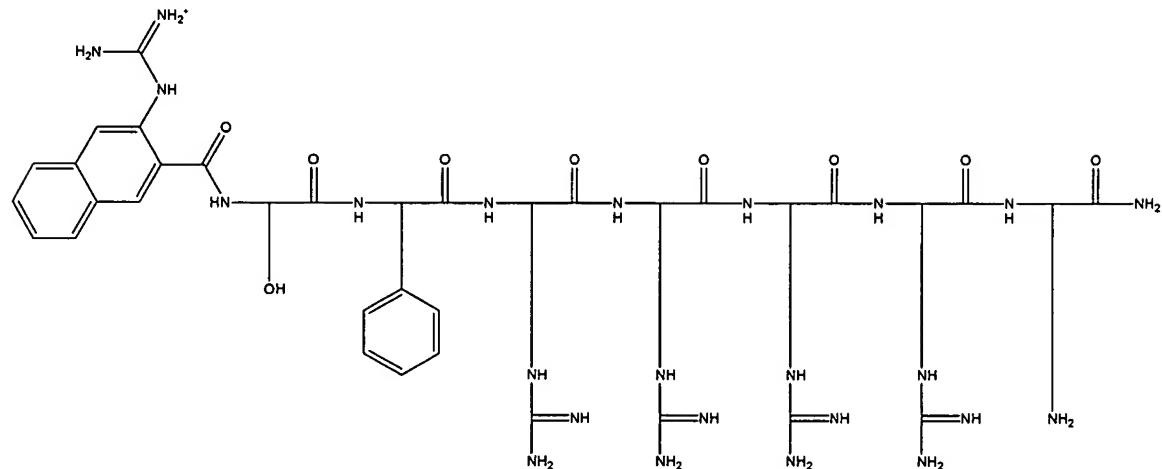


Compound 38

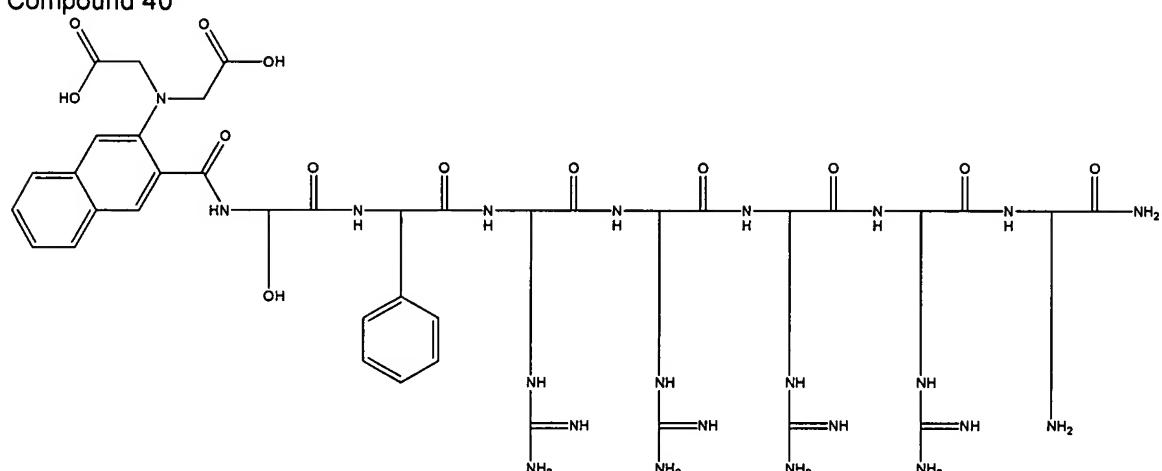


Compound 39

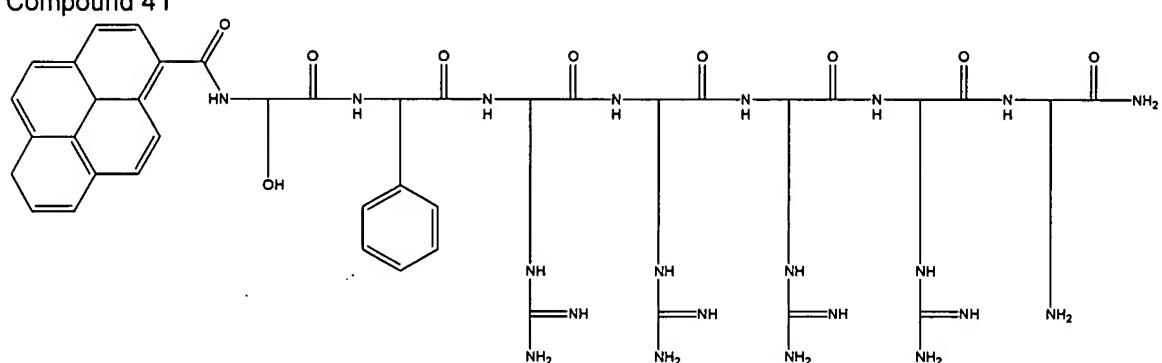
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Compound 40

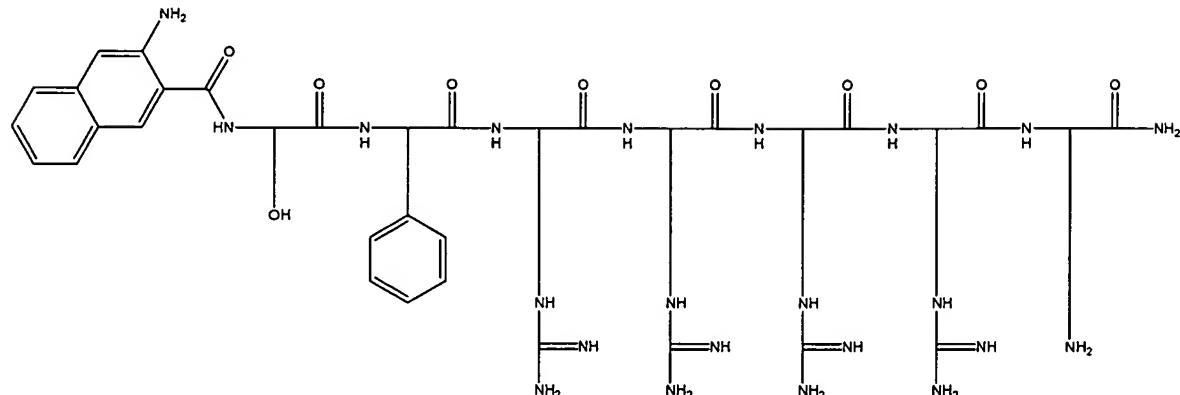


Compound 41

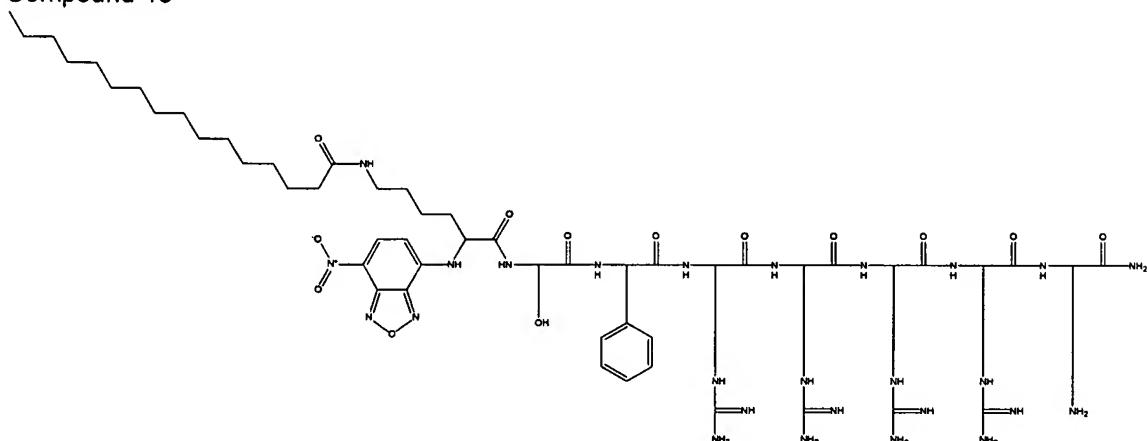


Compound 42

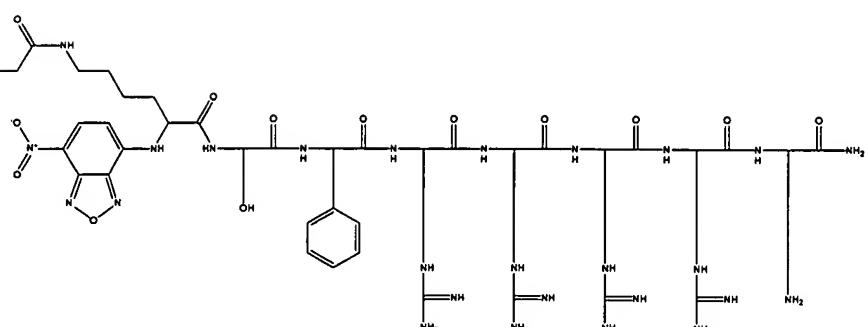
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Compound 43

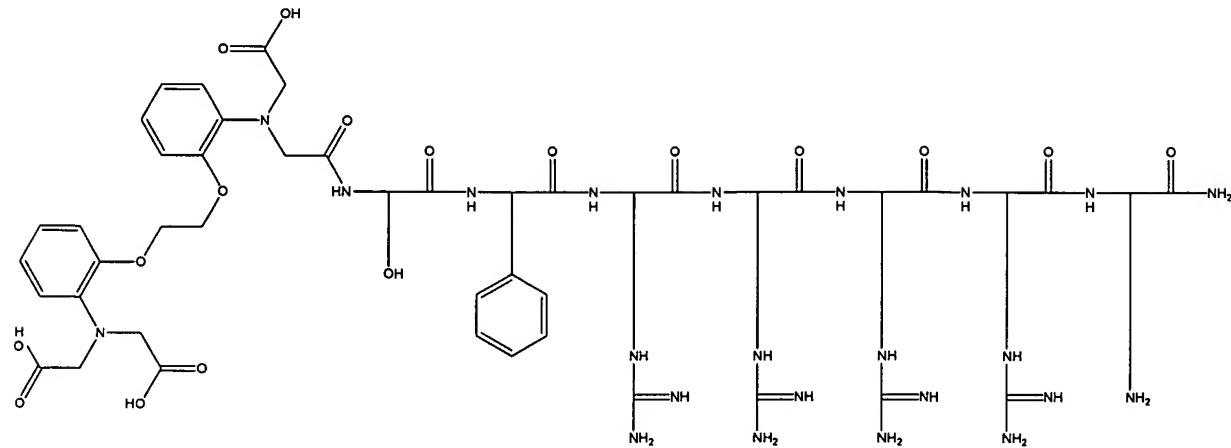


Compound 44

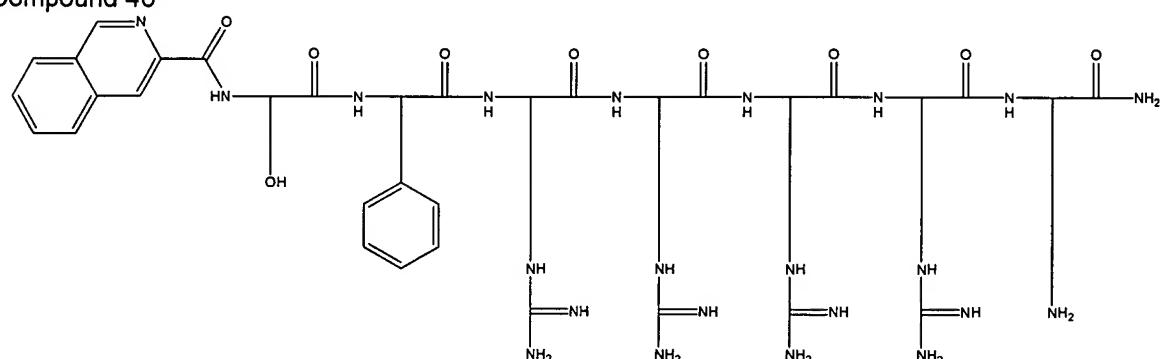


Compound 45

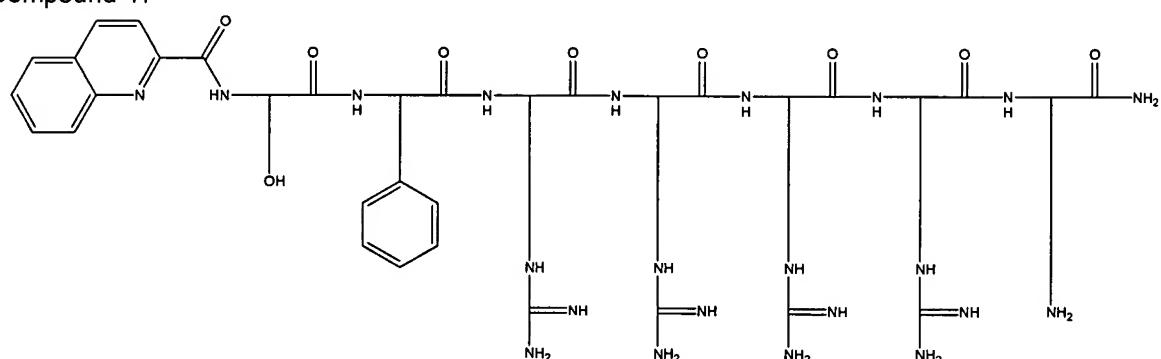
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Compound 46

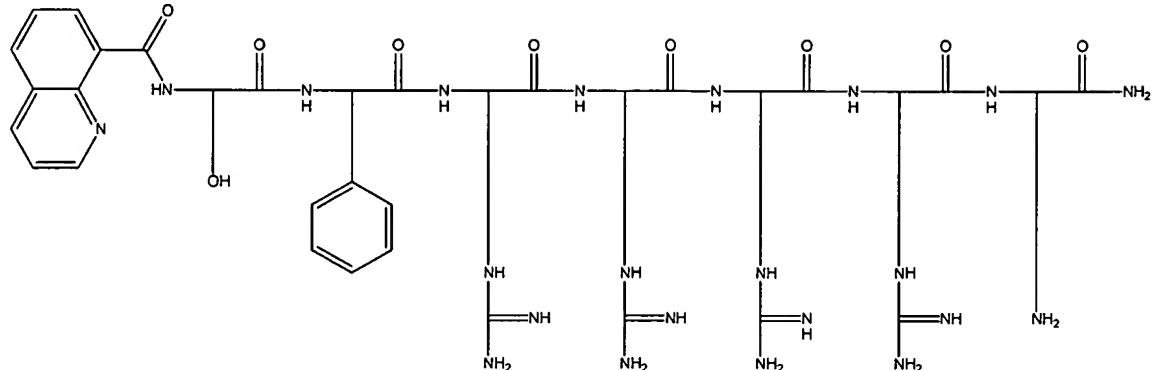


Compound 47

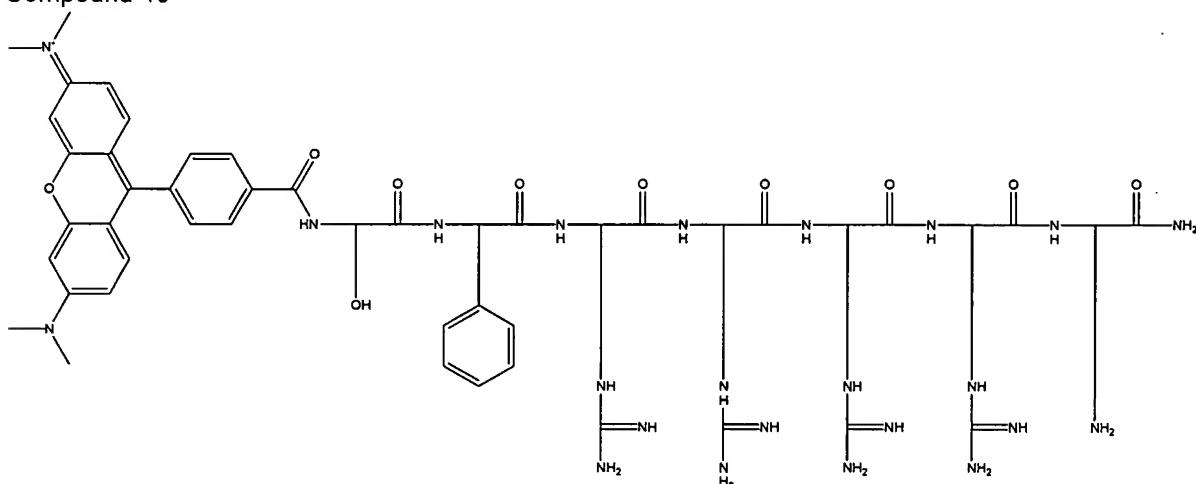


Compound 48

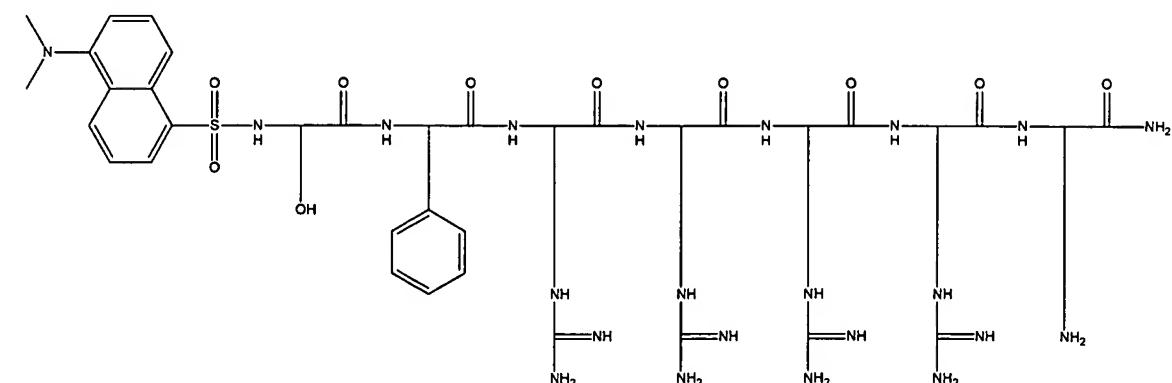
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Compound 49

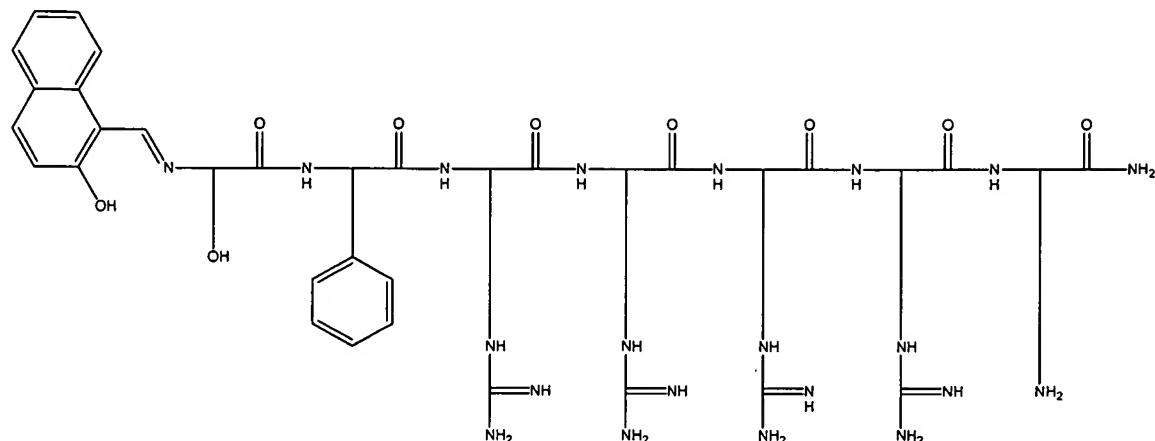


Compound 50

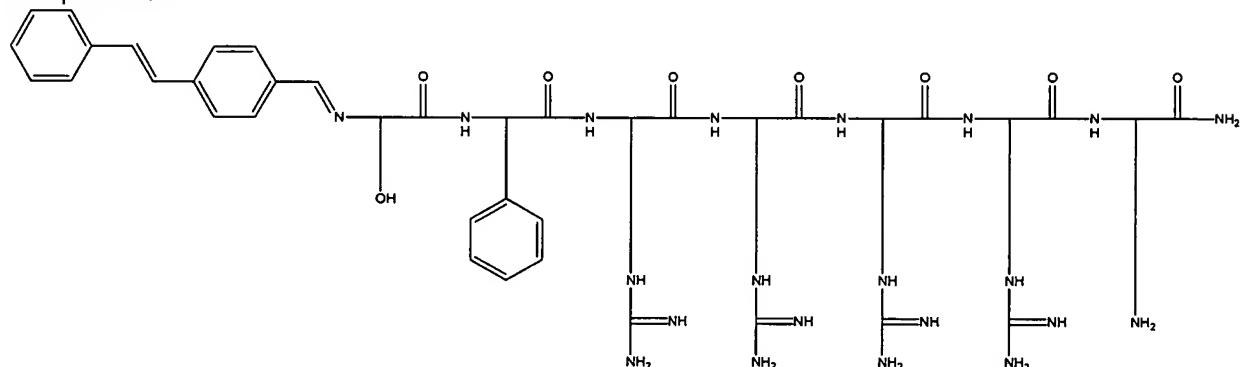


Compound 51

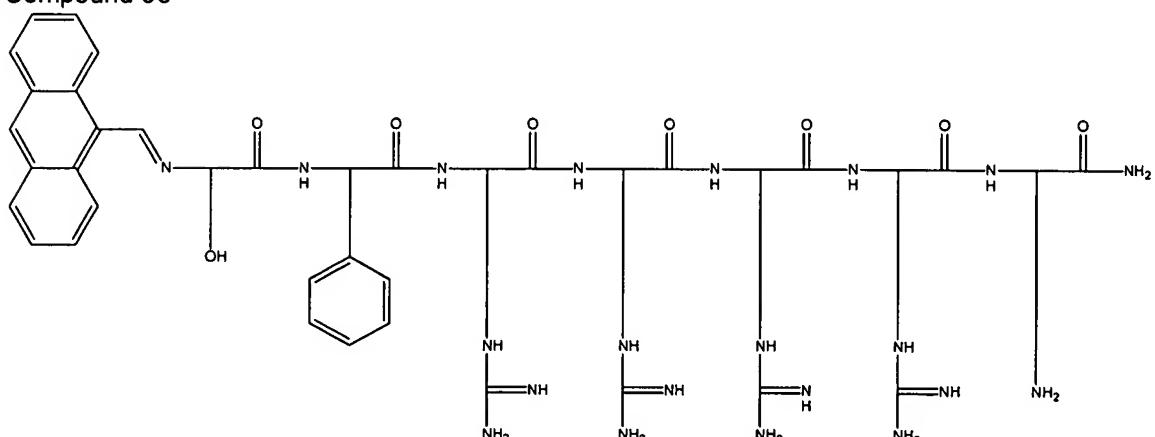
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Compound 52

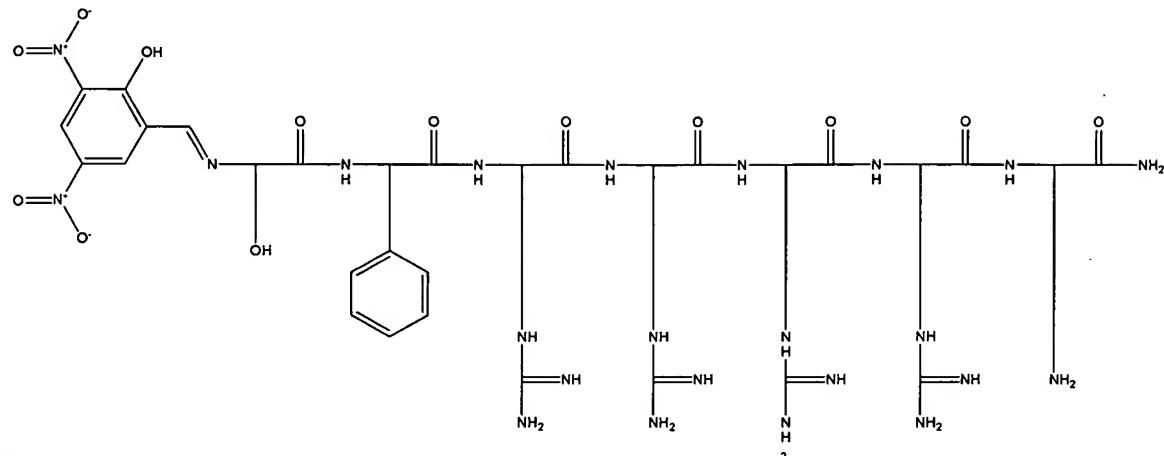


Compound 53

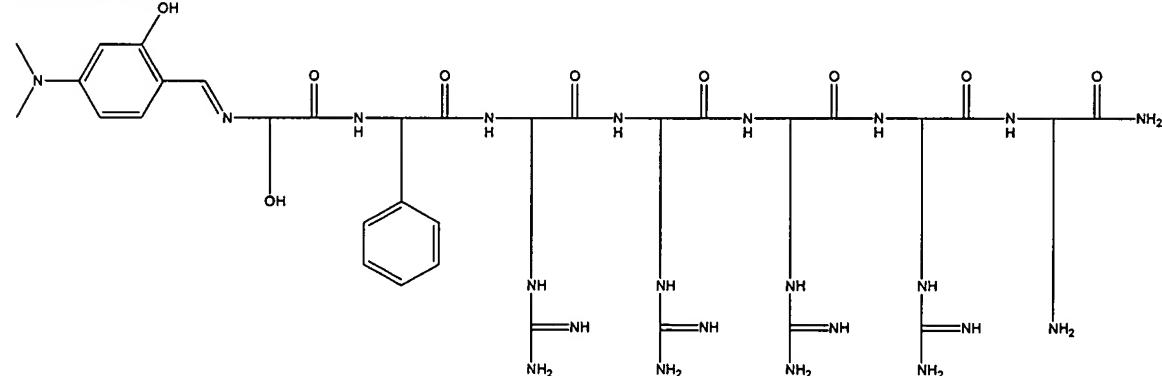


Compound 54

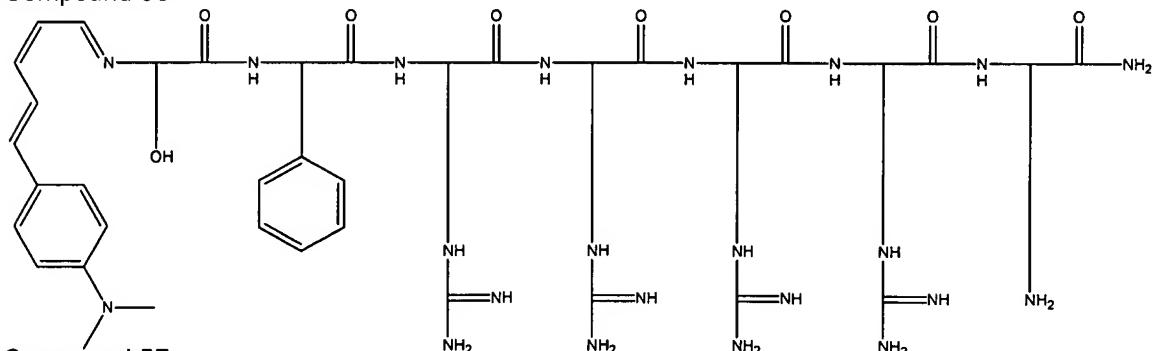
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Compound 55

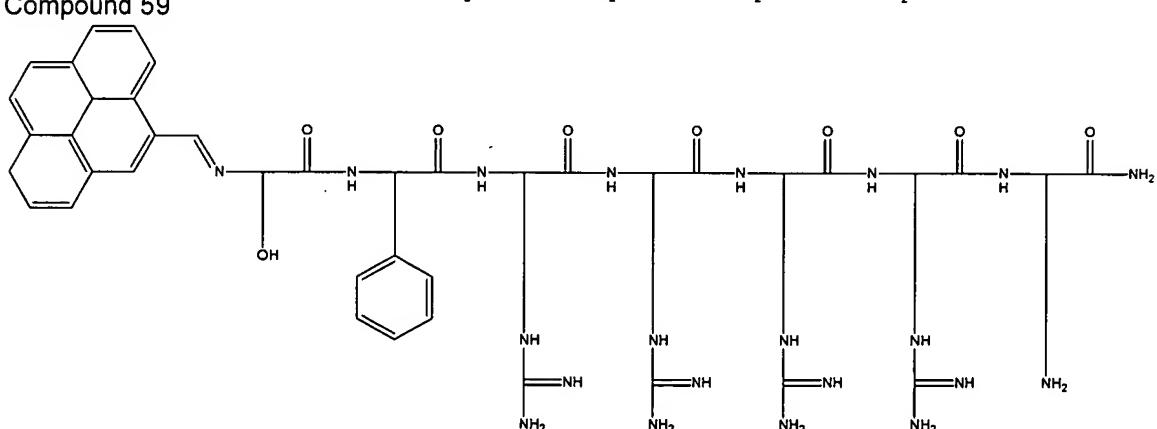
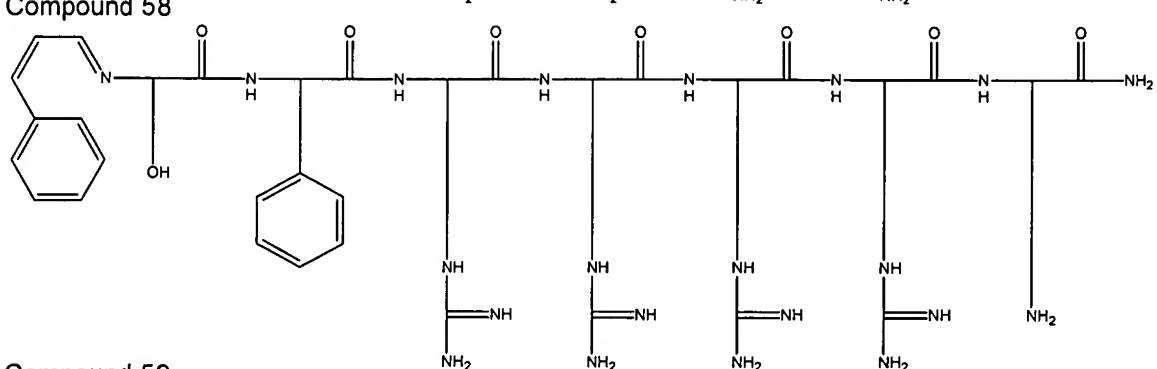
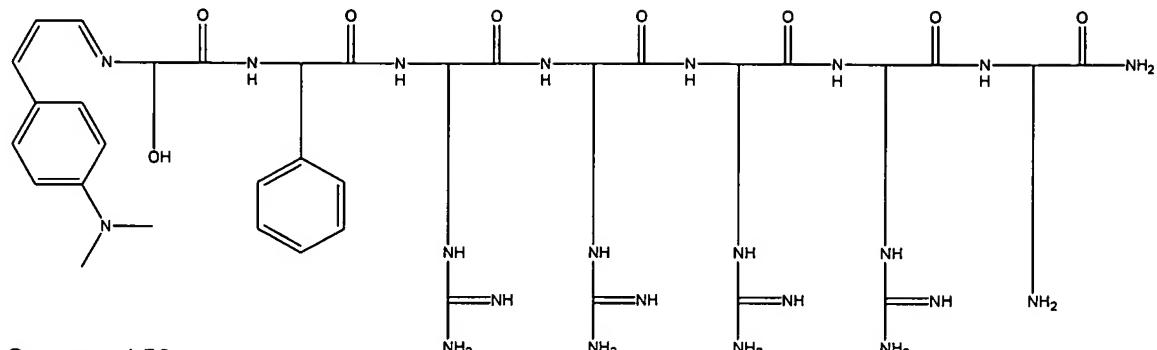


Compound 56

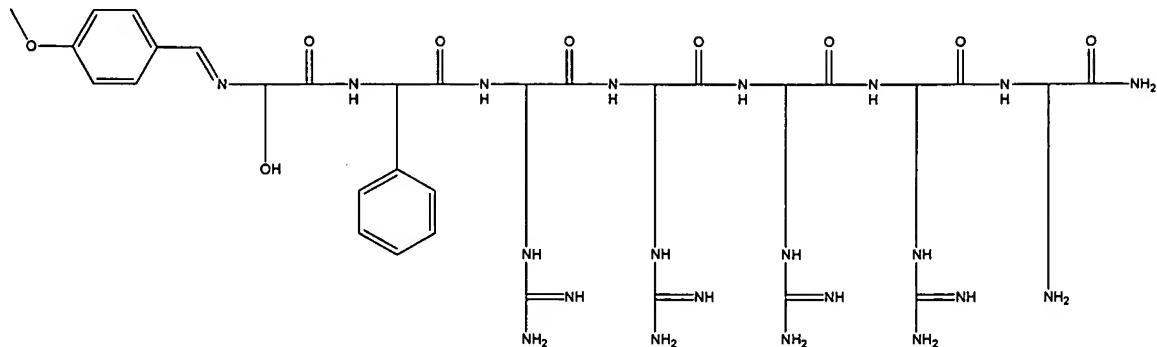


Compound 57

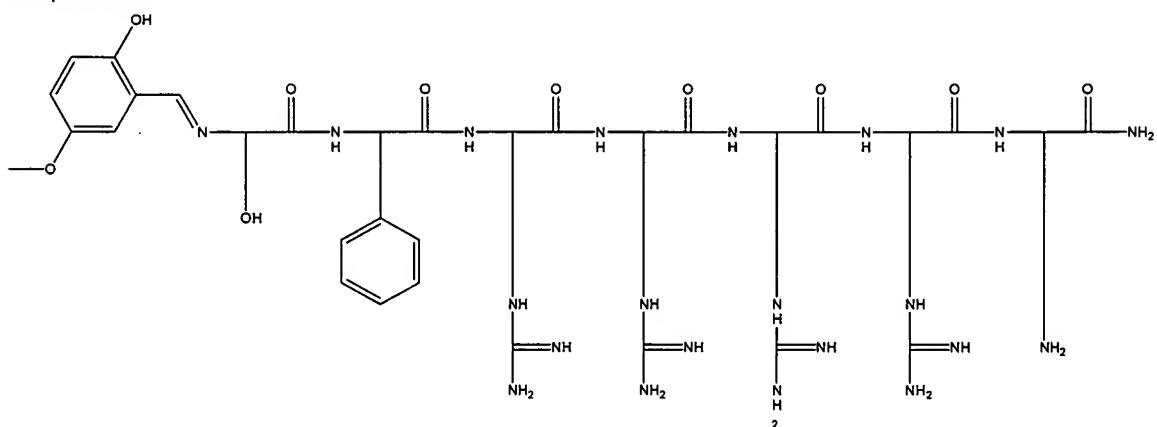
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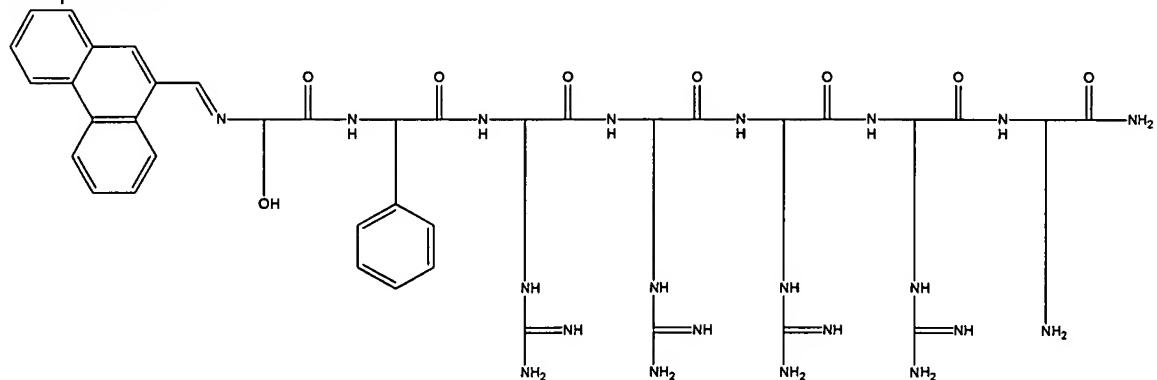
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Compound 61

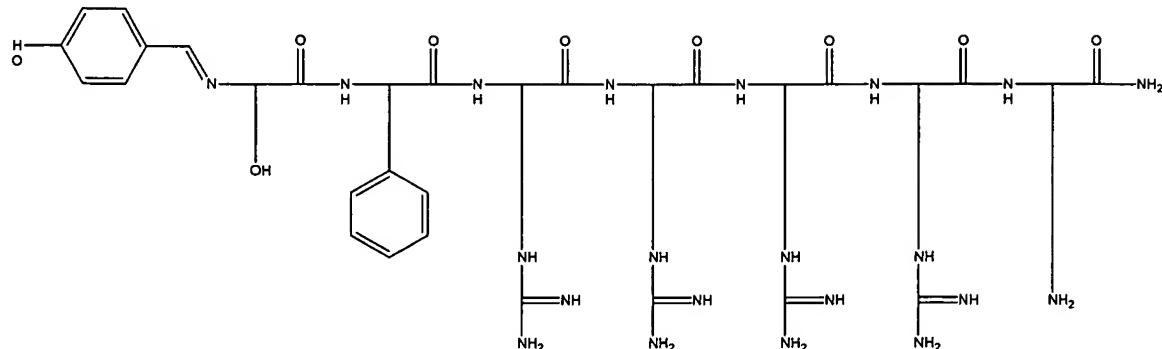


Compound 62

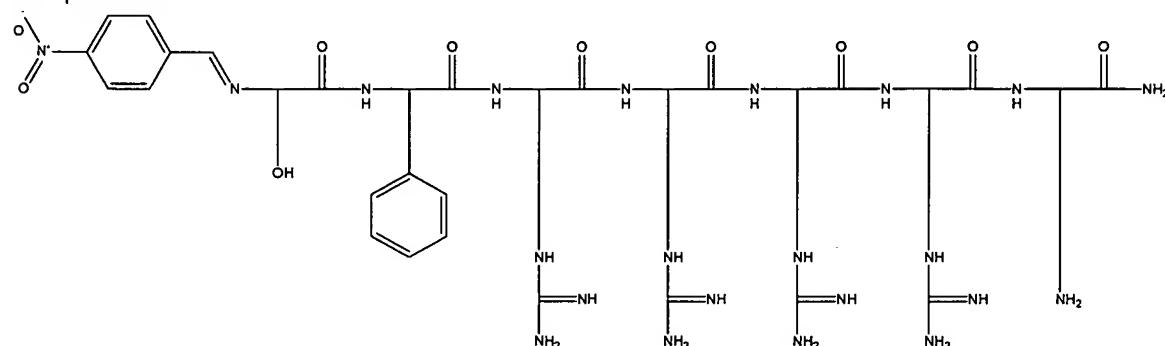


Compound 63

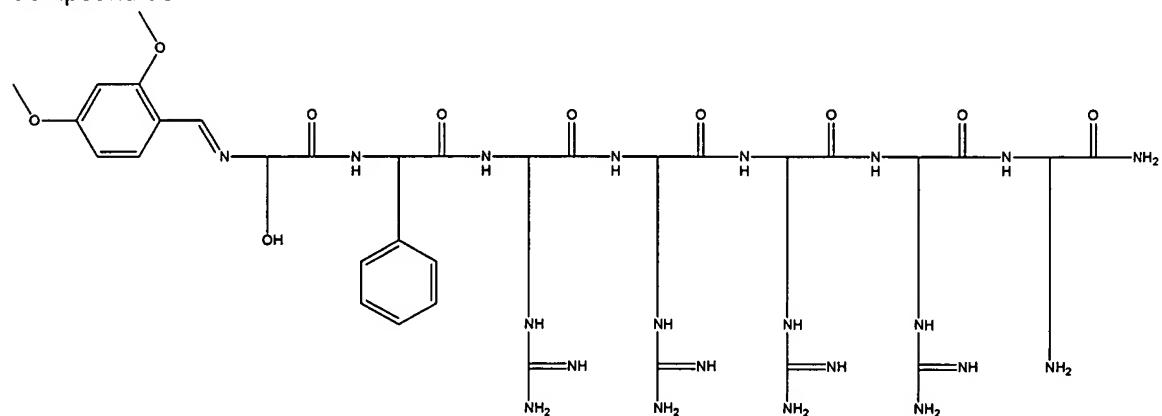
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Compound 64

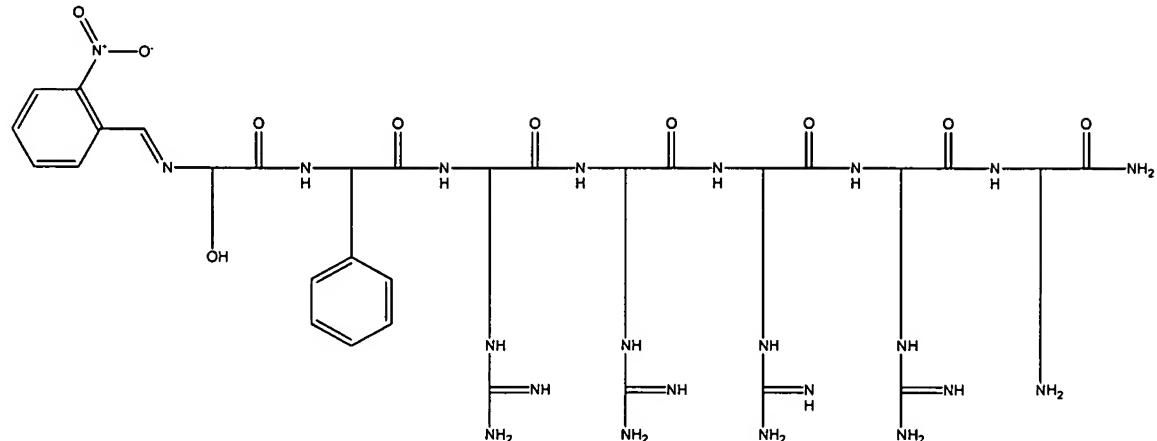


Compound 65

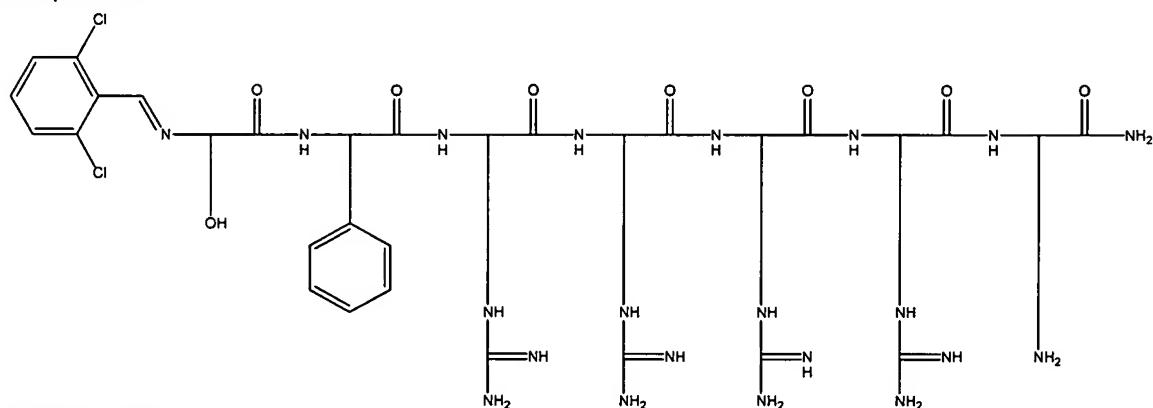


Compound 66

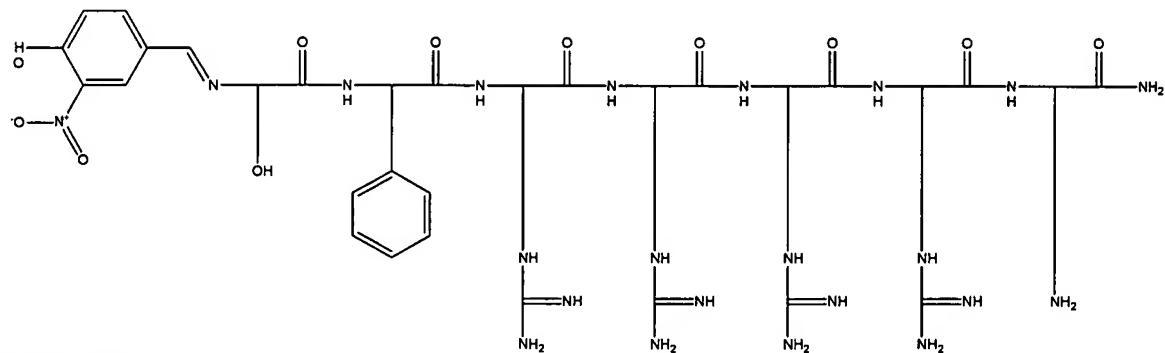
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Compound 67

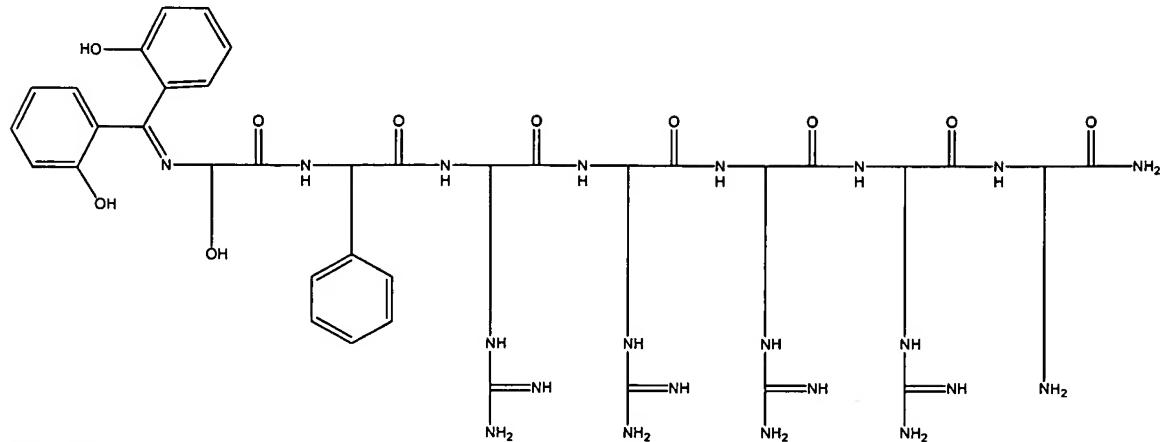


Compound 68

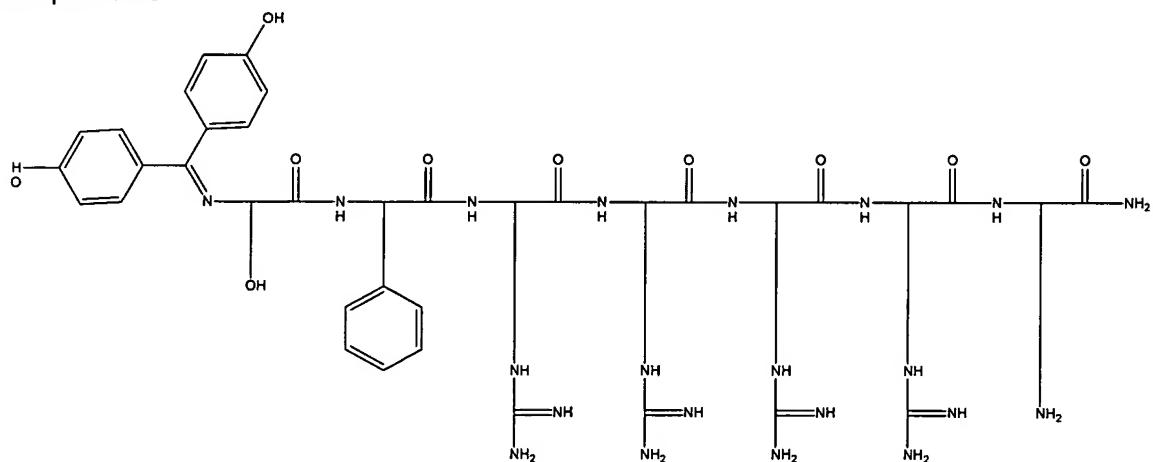


Compound 69

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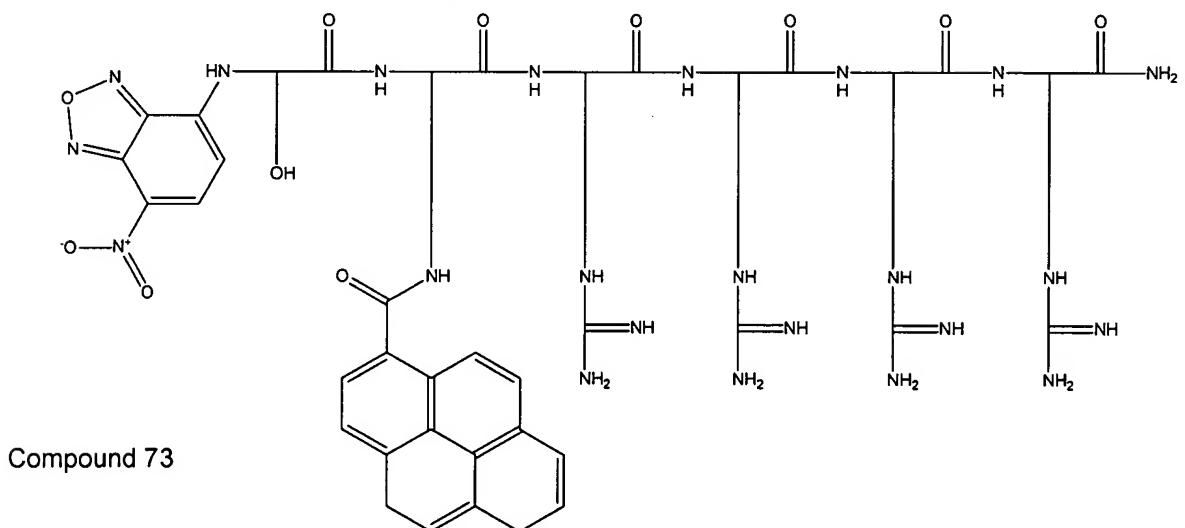
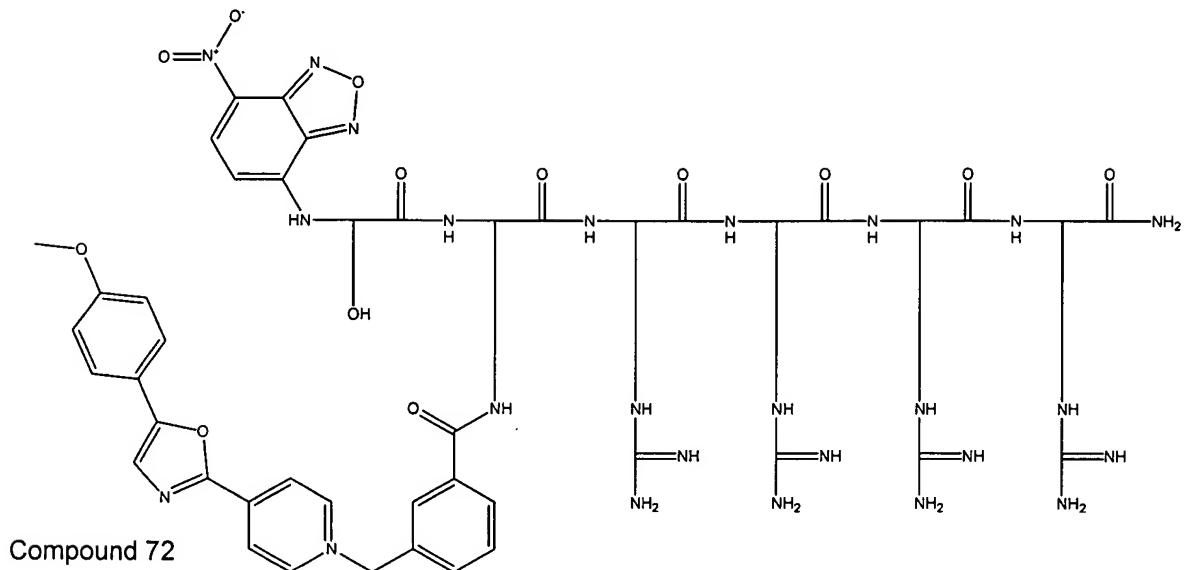


Compound 70

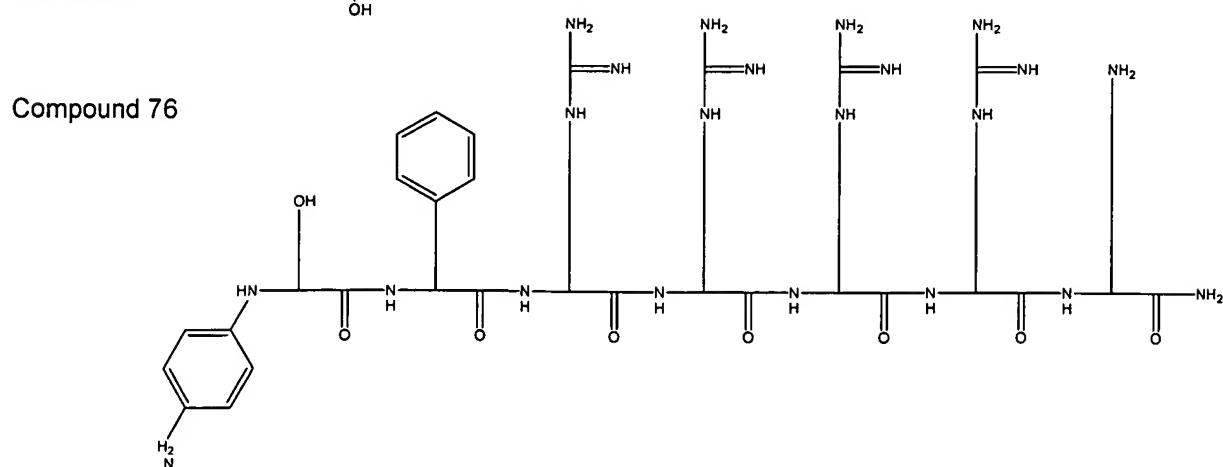
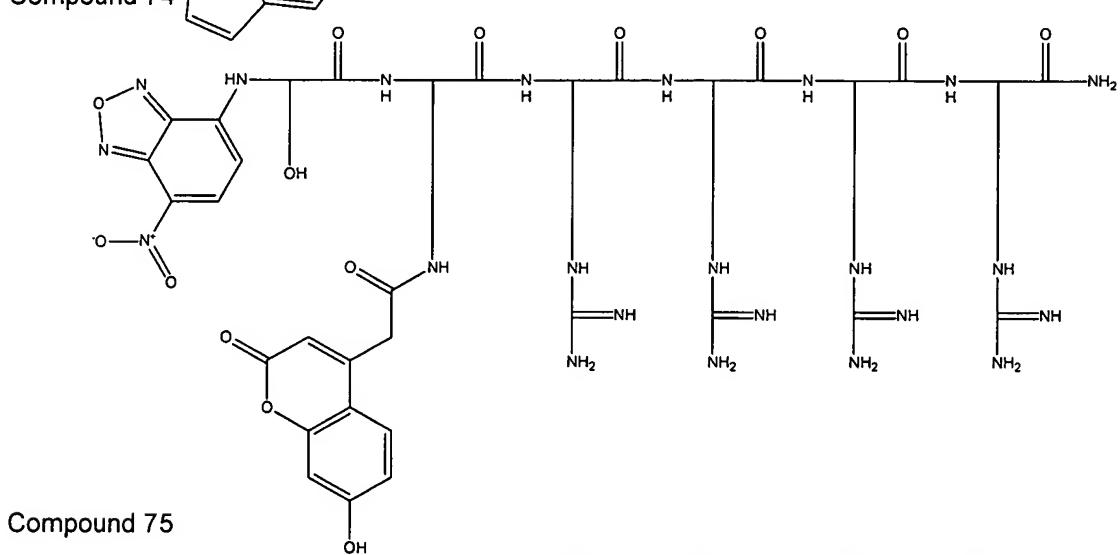
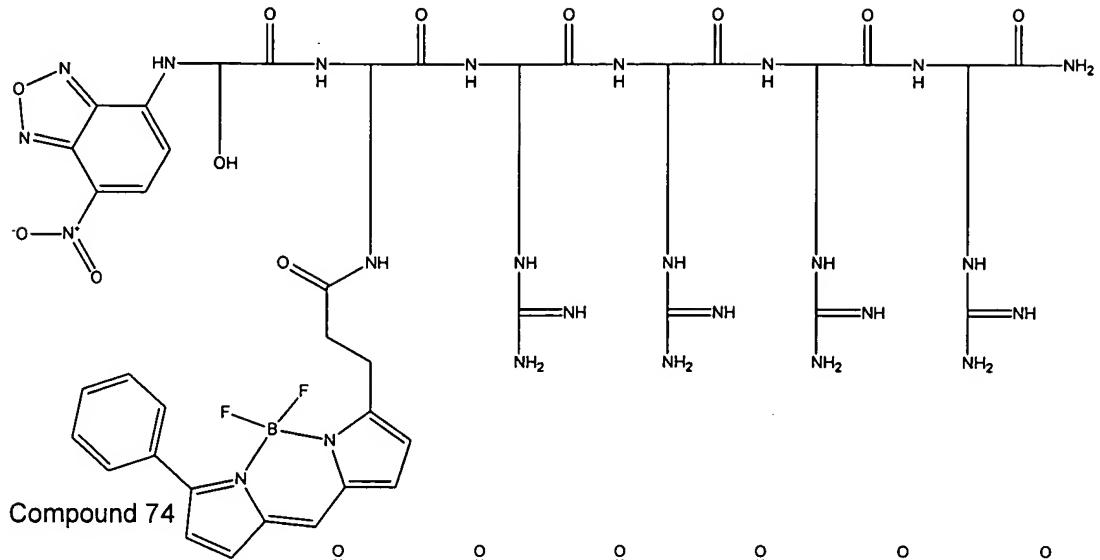


Compound 71

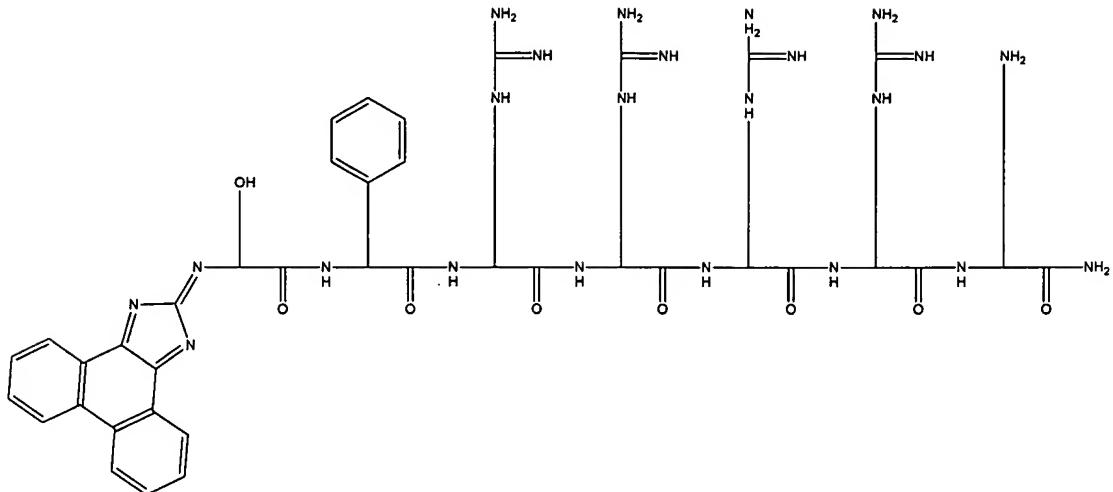
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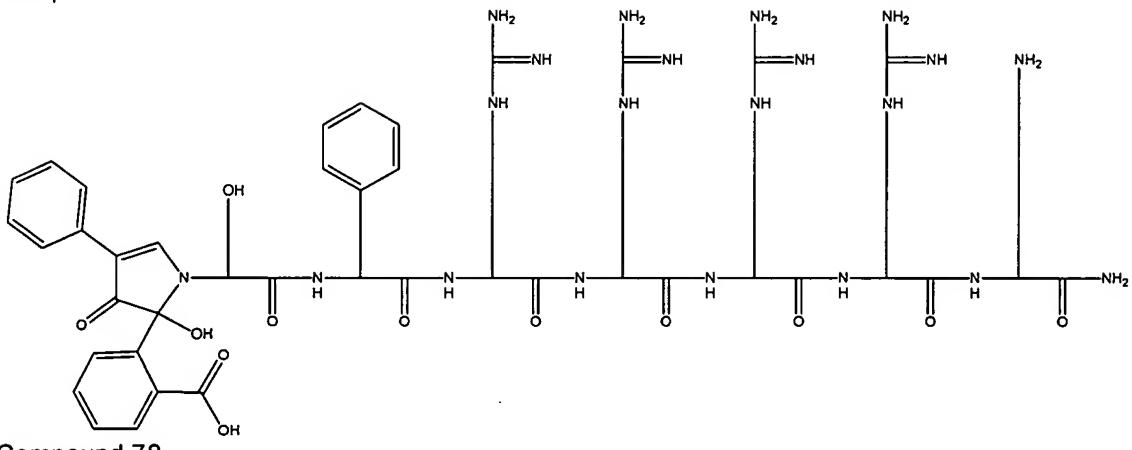
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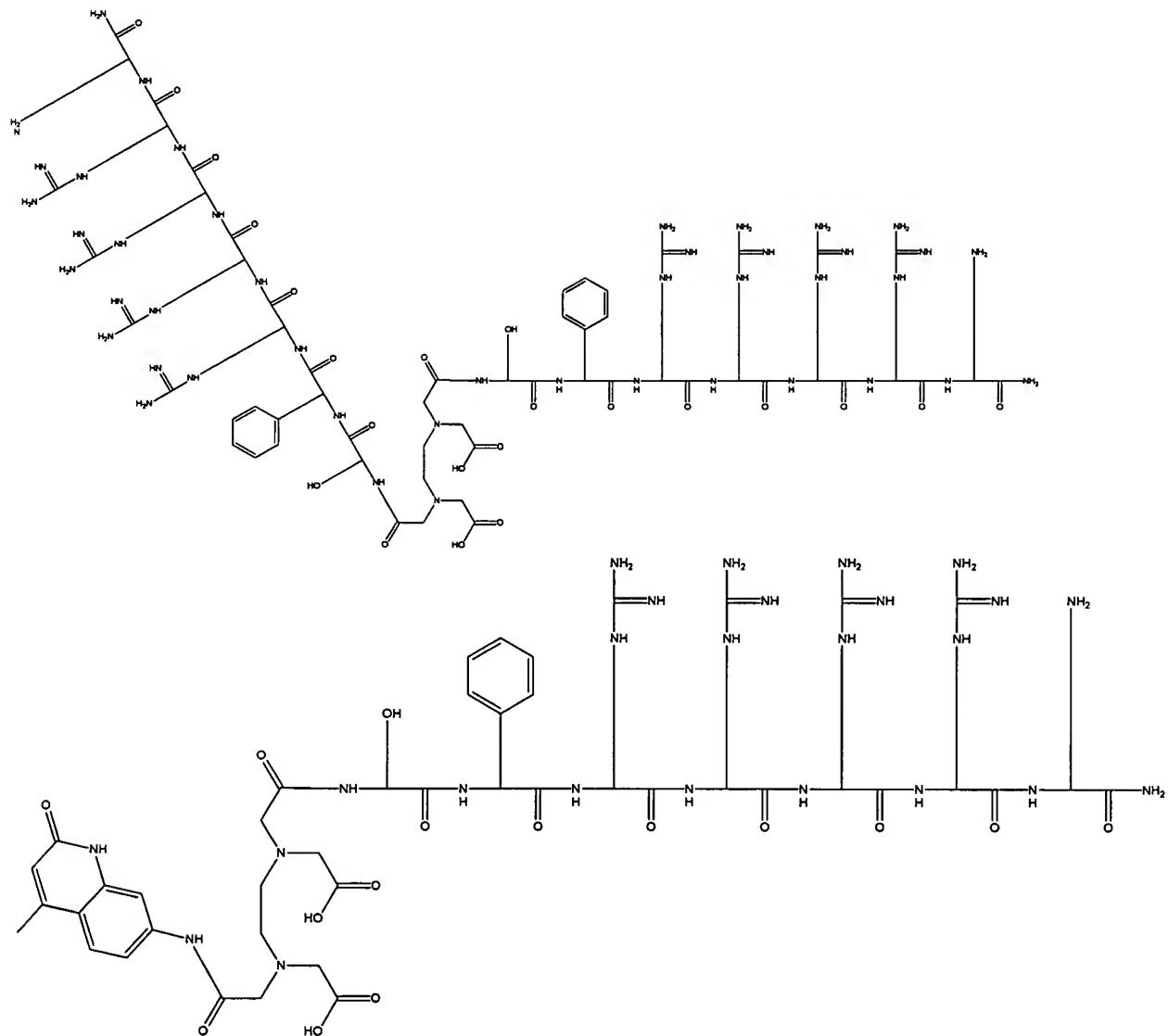
Compound 77



Compound 78

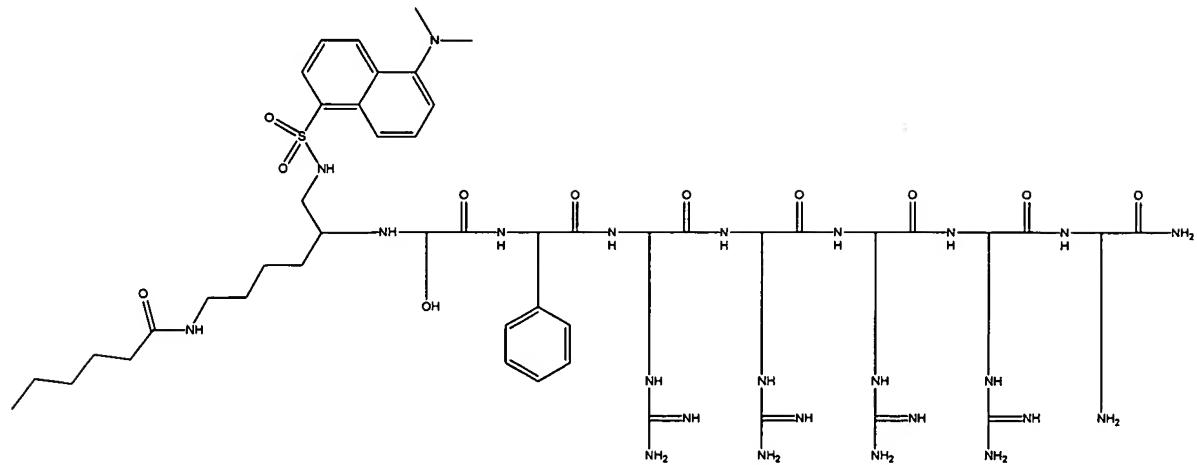
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Compound 79



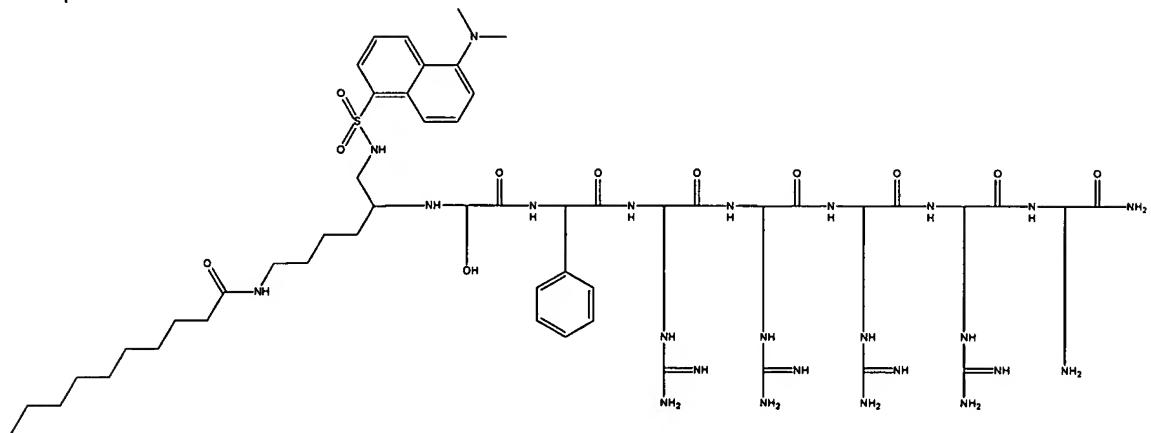
Compound 80

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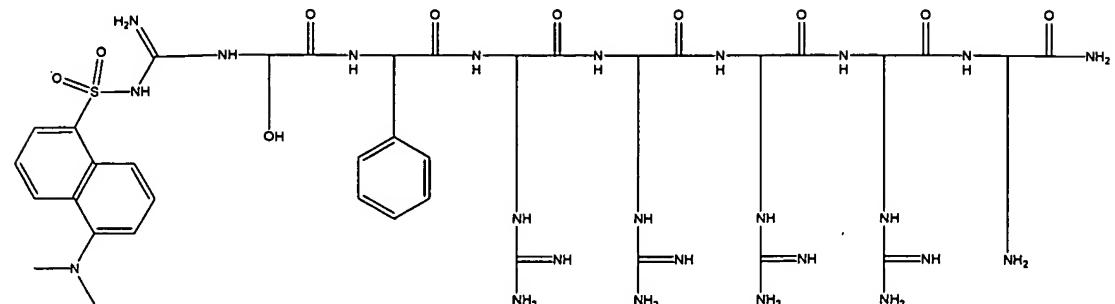
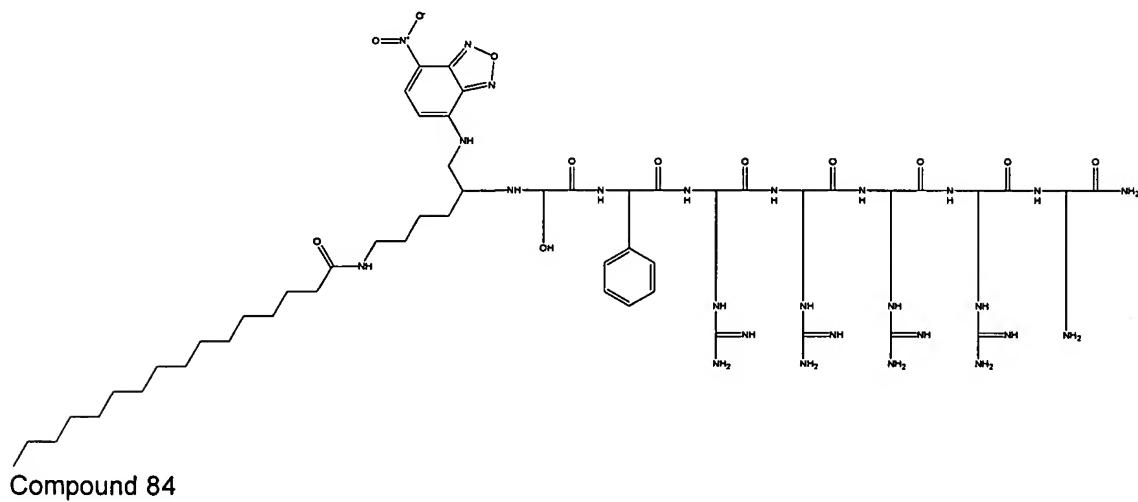
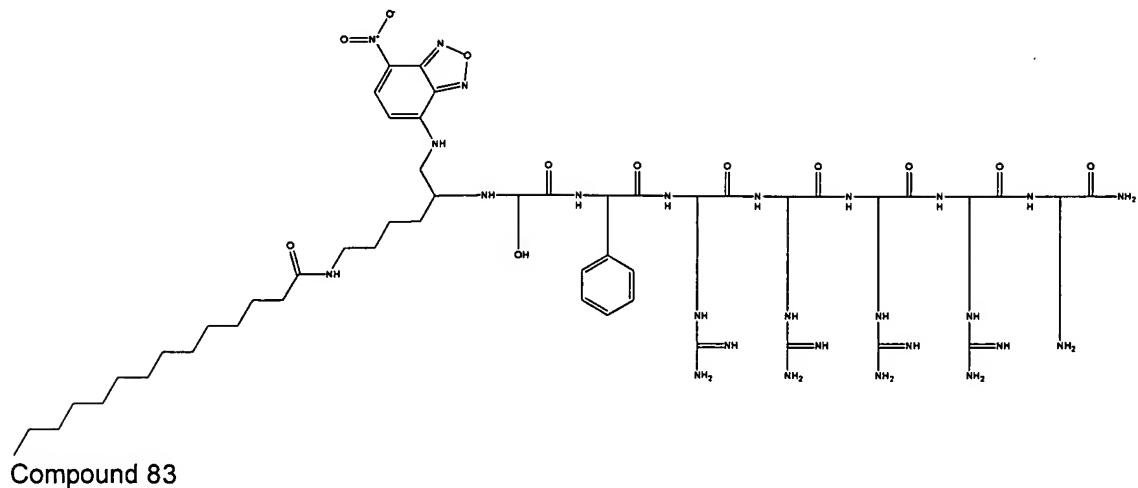


Compound 81

Compound 82

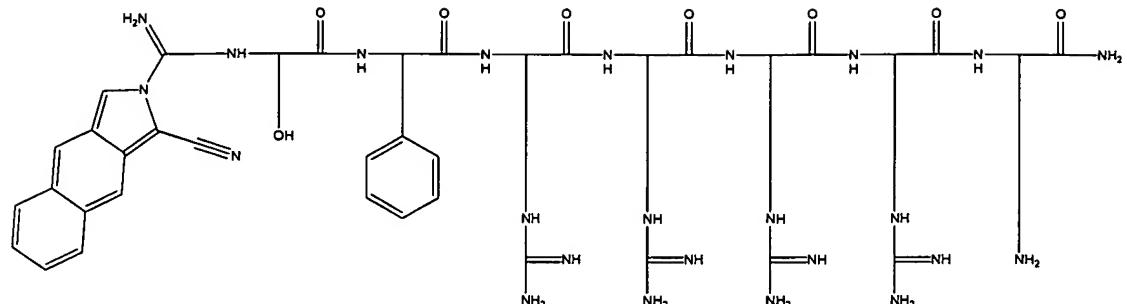


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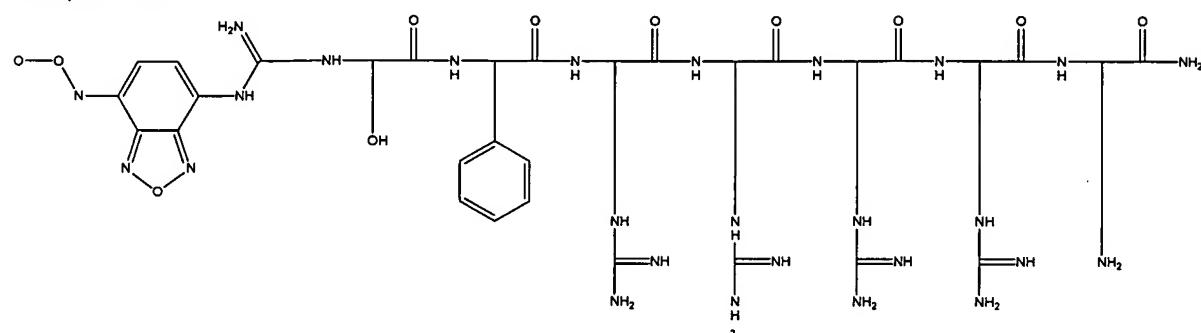


Compound 85

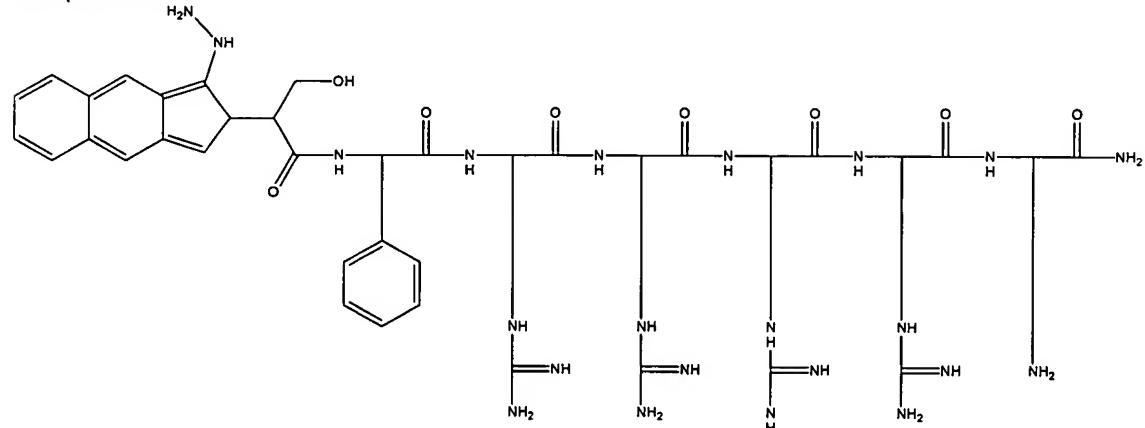
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Compound 86

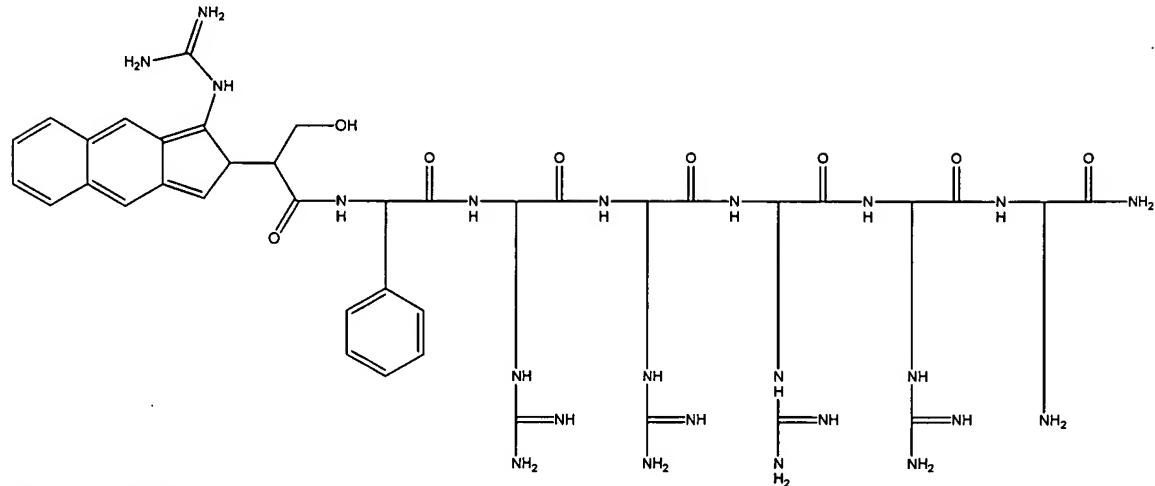


Compound 87

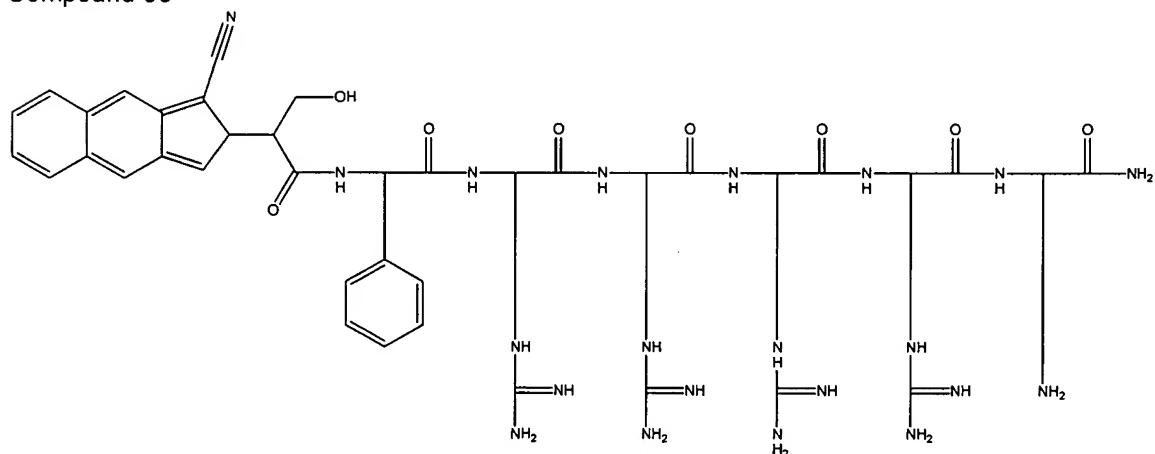


Compound 88

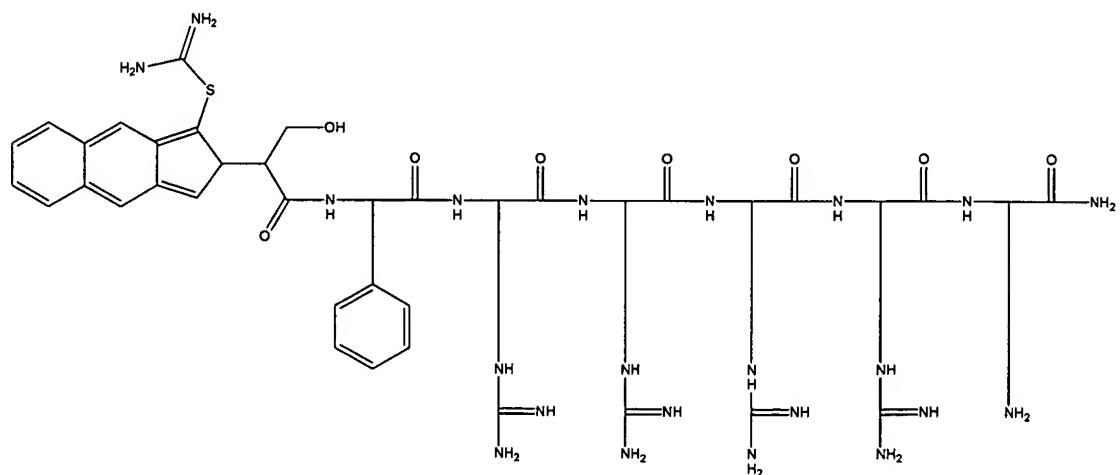
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Compound 89

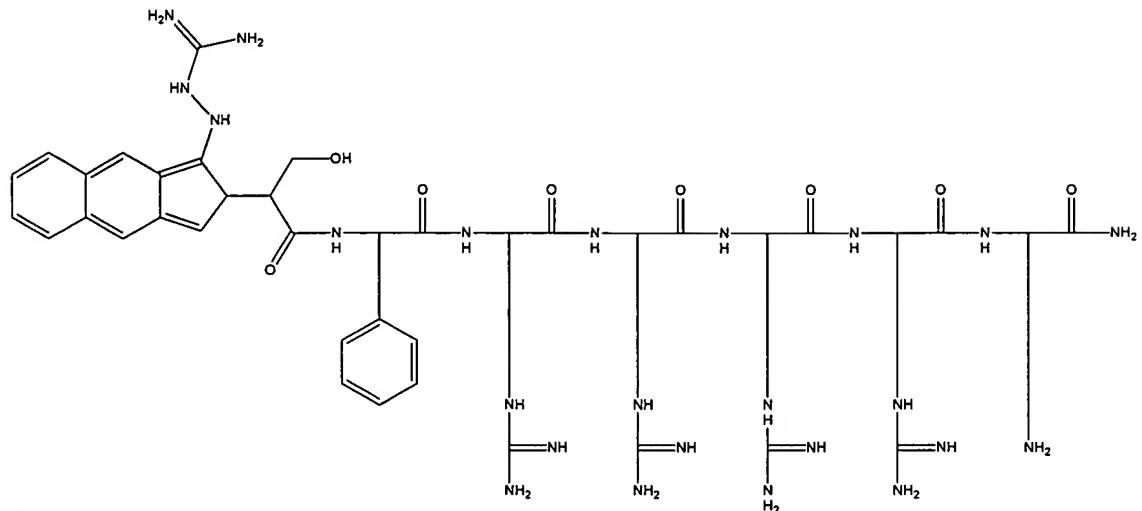


Compound 90

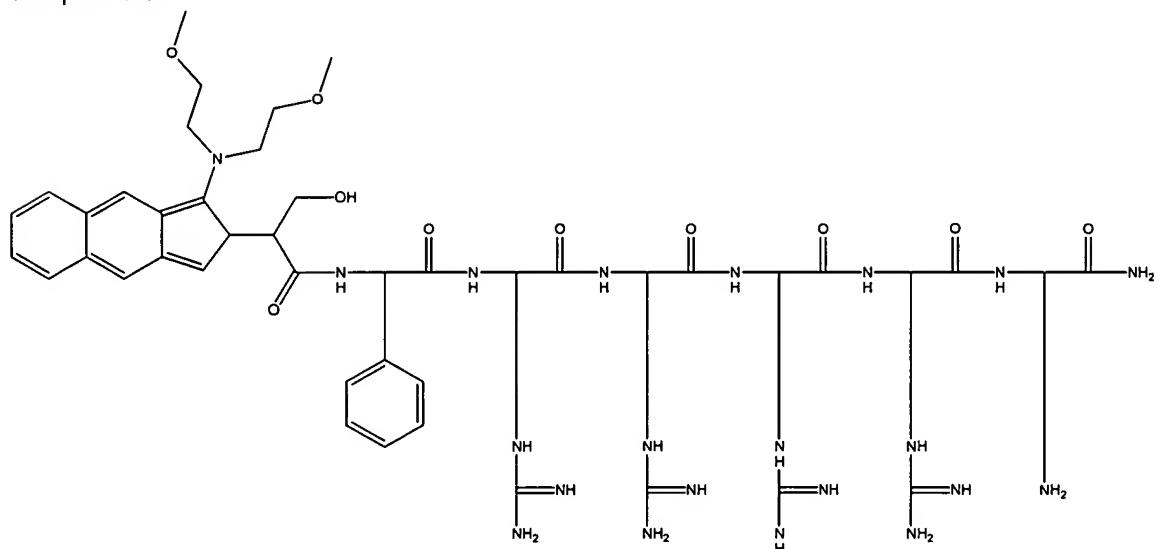


Compound 91

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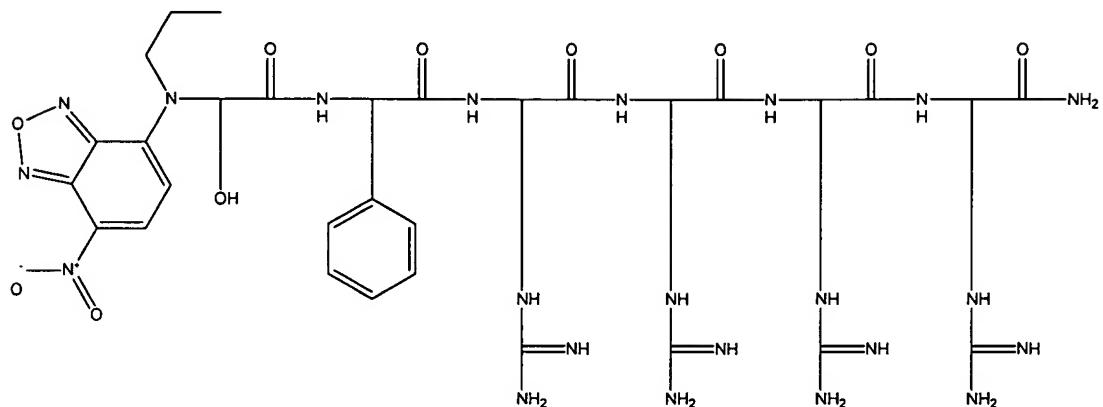


Compound 92

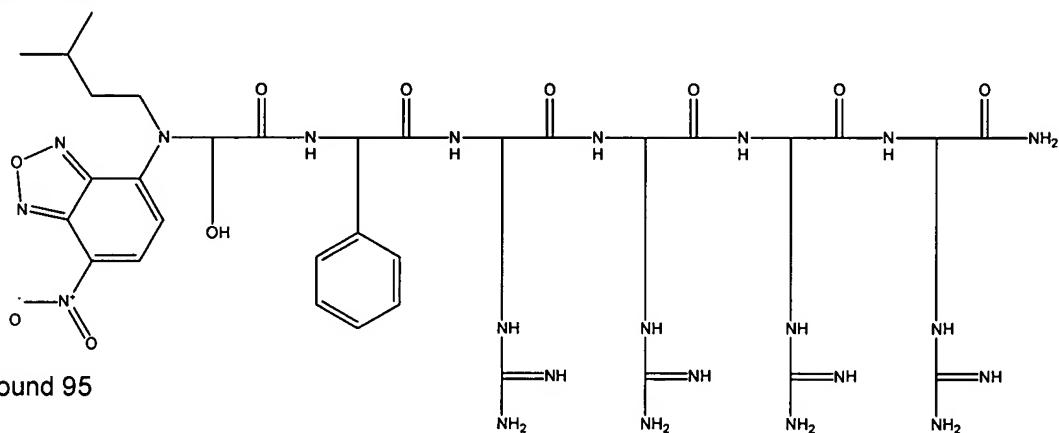


Compound 93

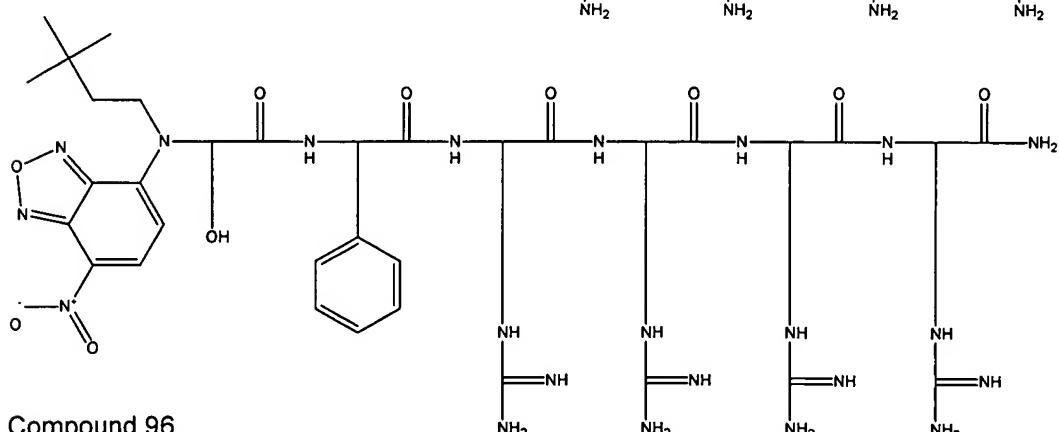
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Compound 94

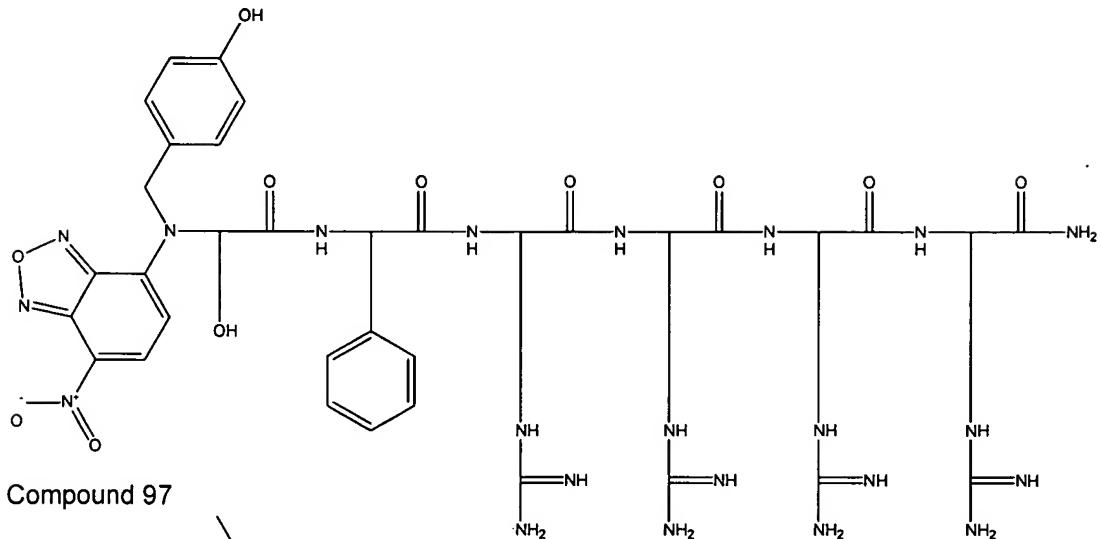


Compound 95

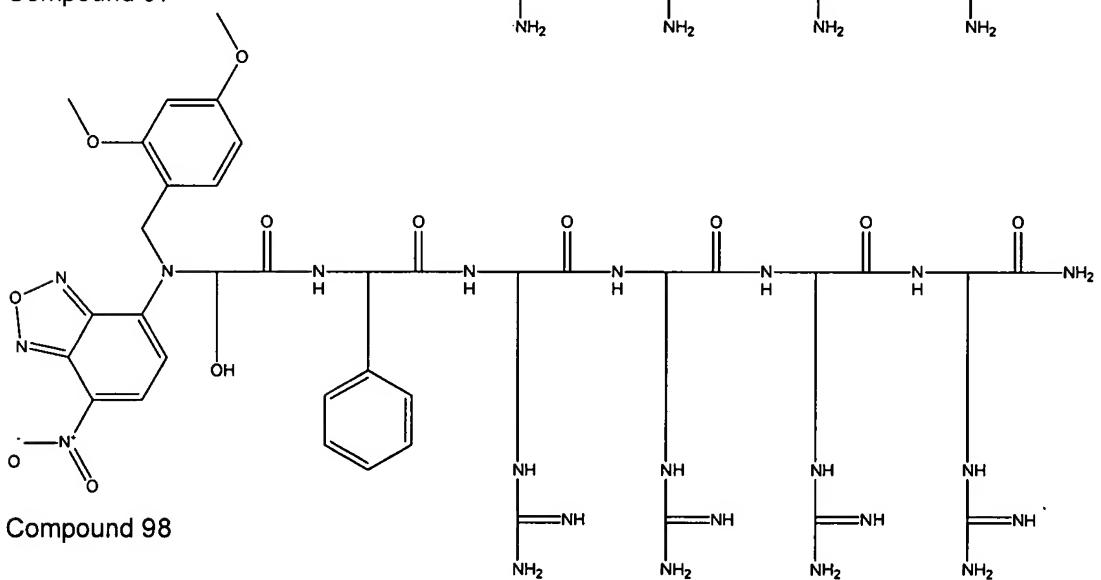


Compound 96

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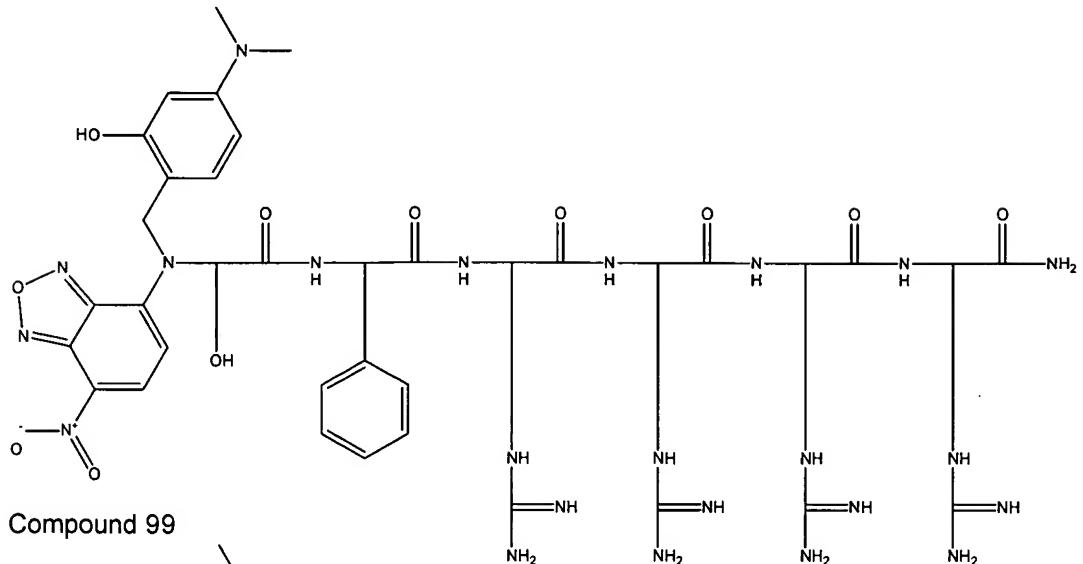


Compound 97

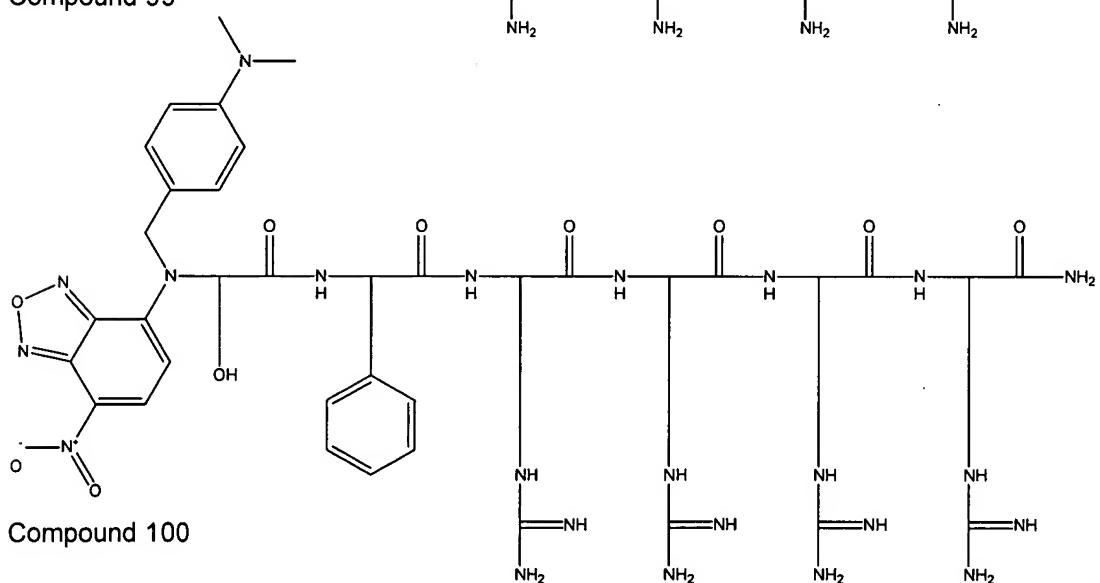


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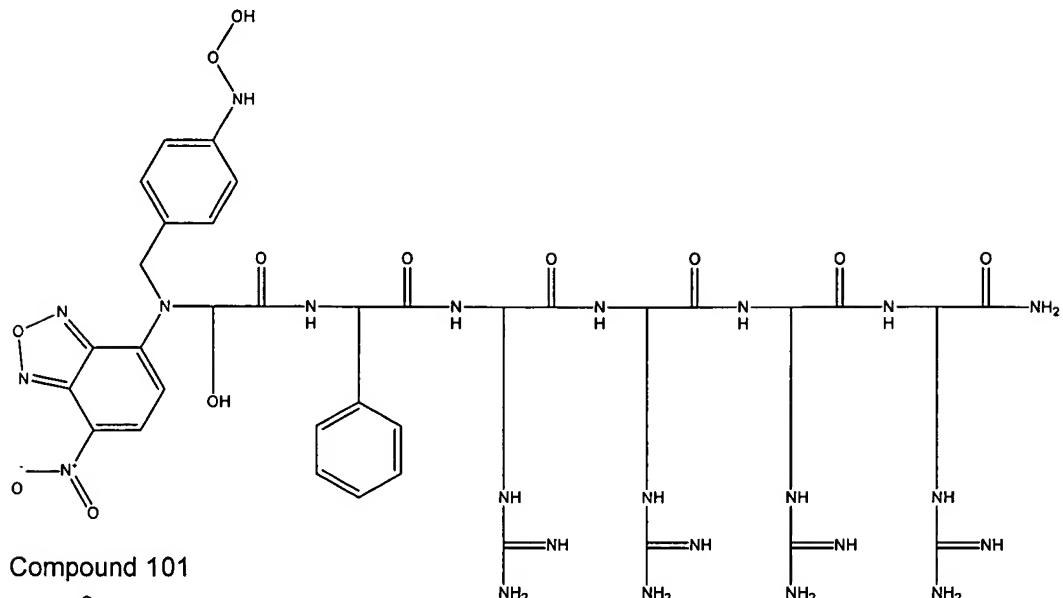


Compound 99

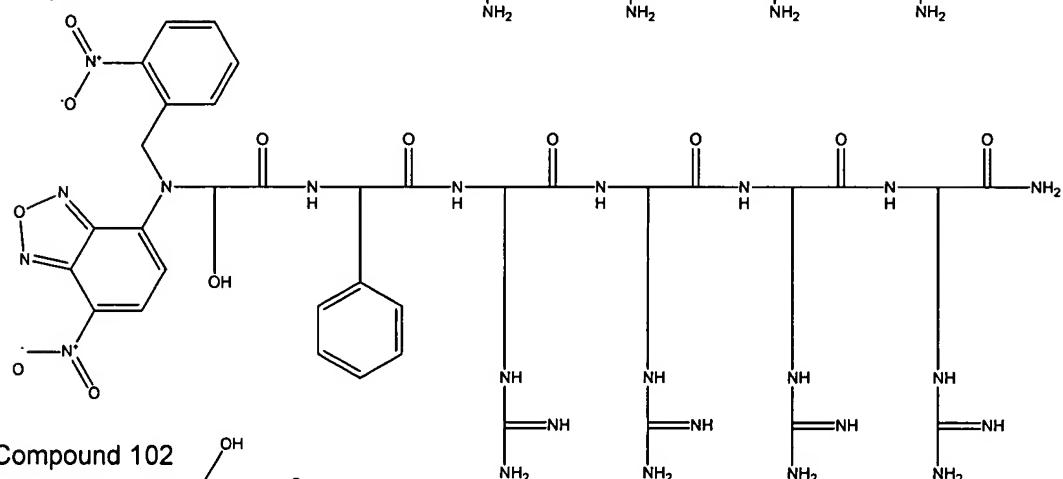


Compound 100

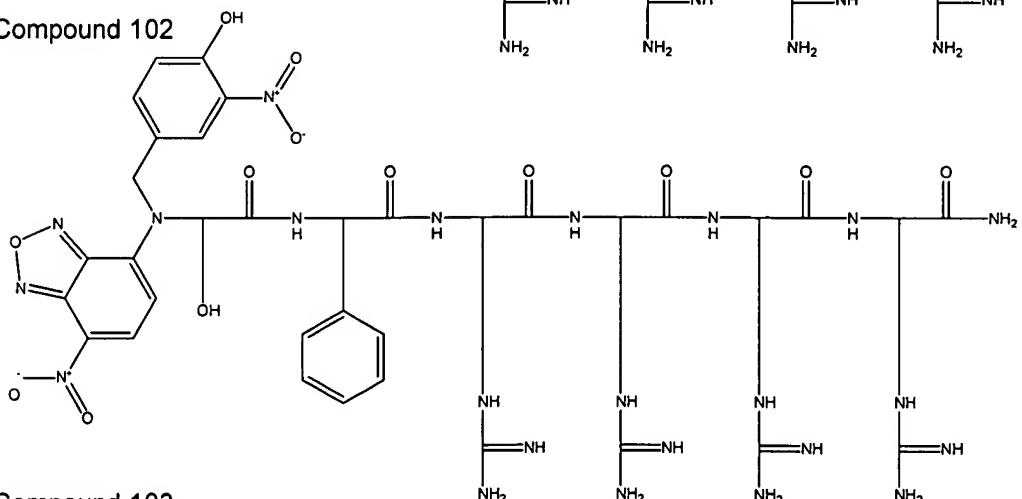
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Compound 101

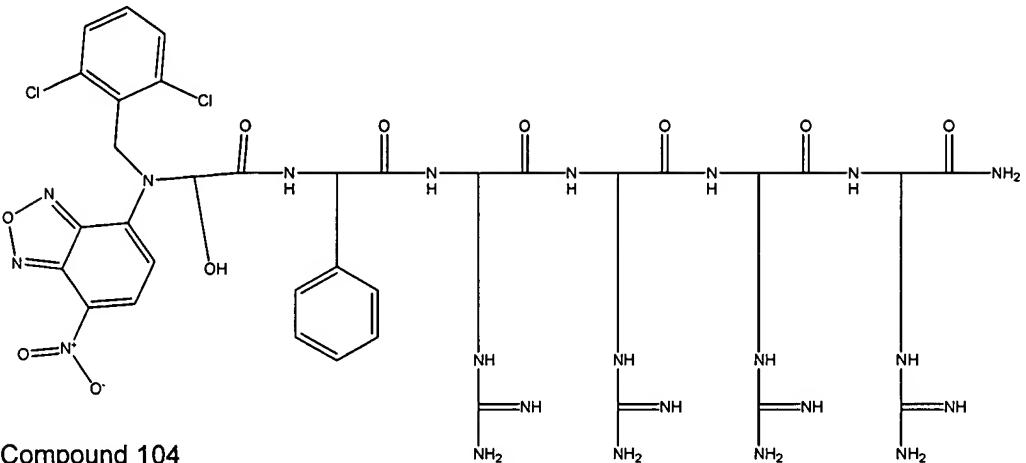


Compound 102

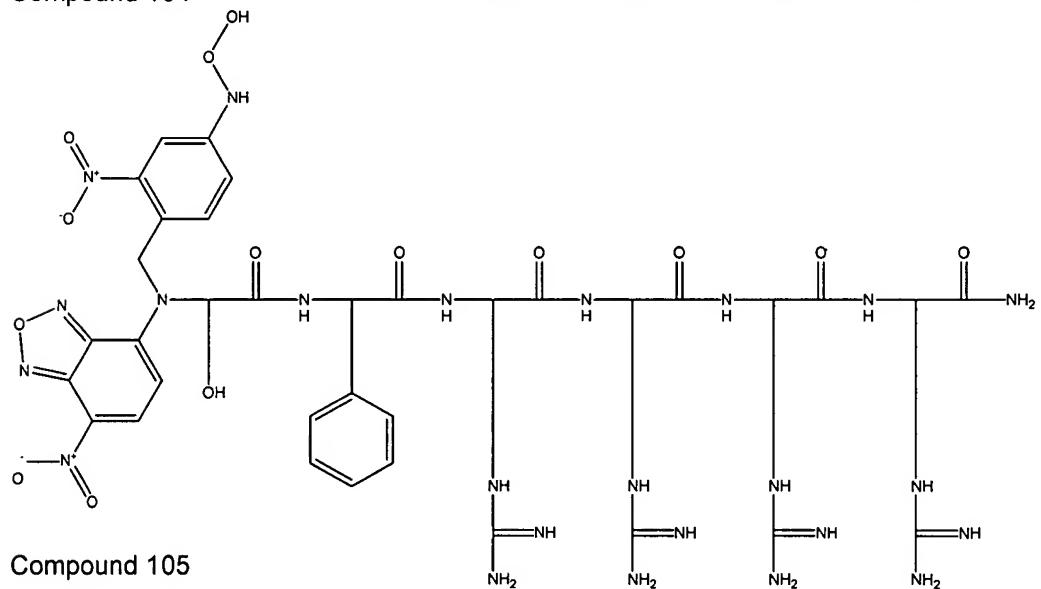


Compound 103

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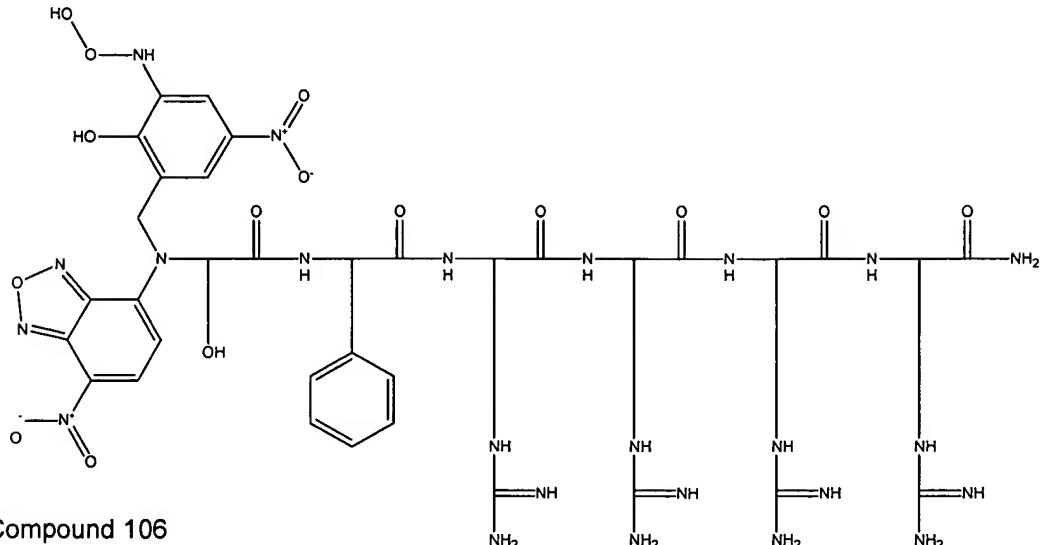


Compound 104

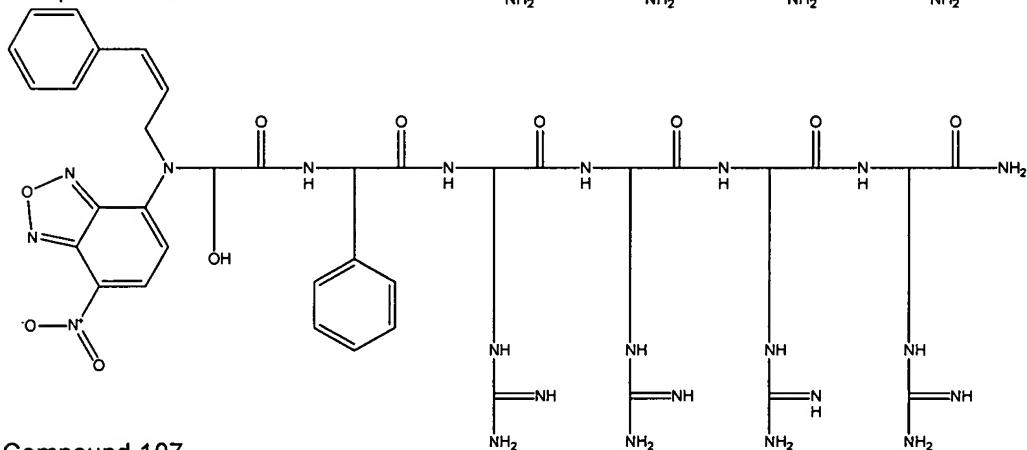


Compound 105

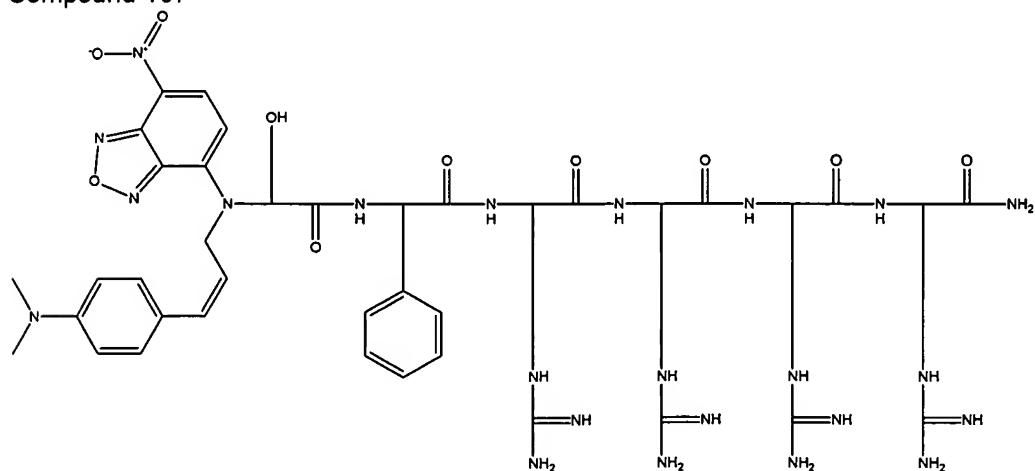
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Compound 106

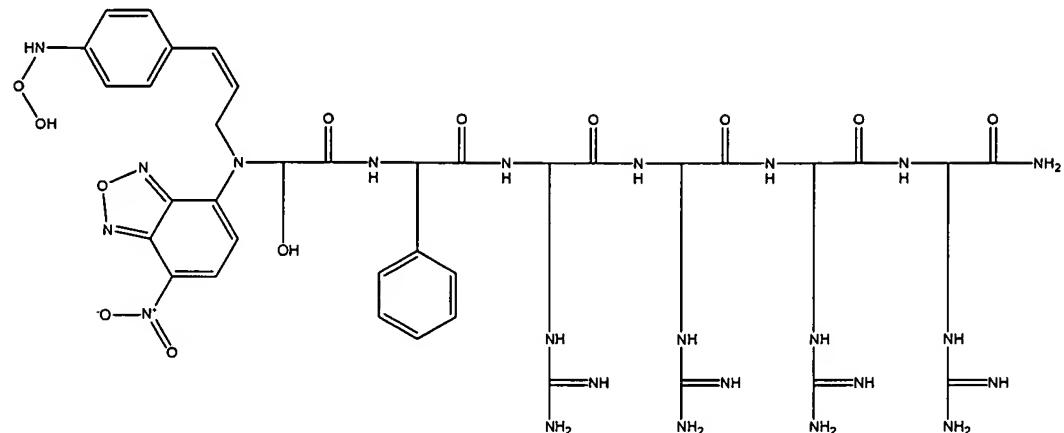


Compound 107

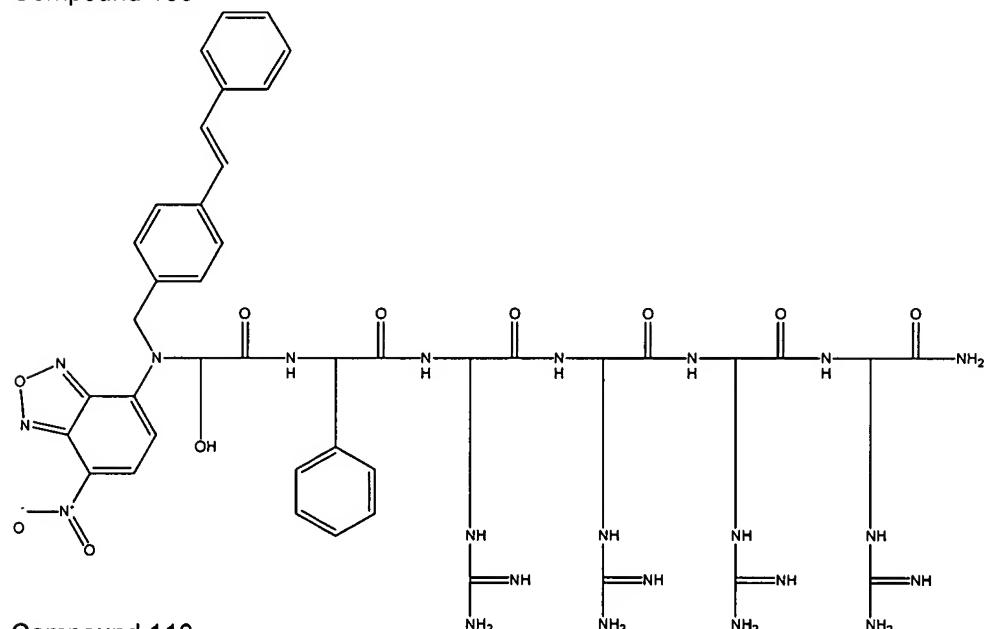


Compound 108

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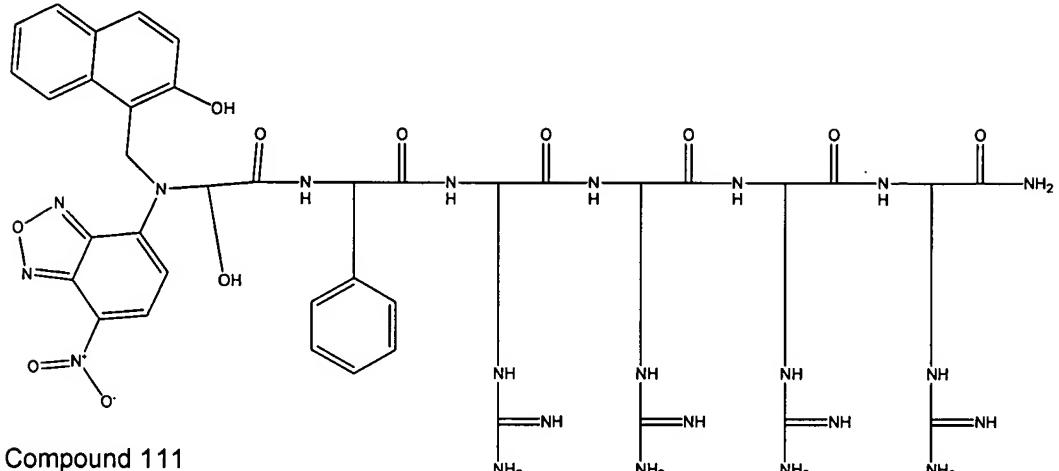


Compound 109

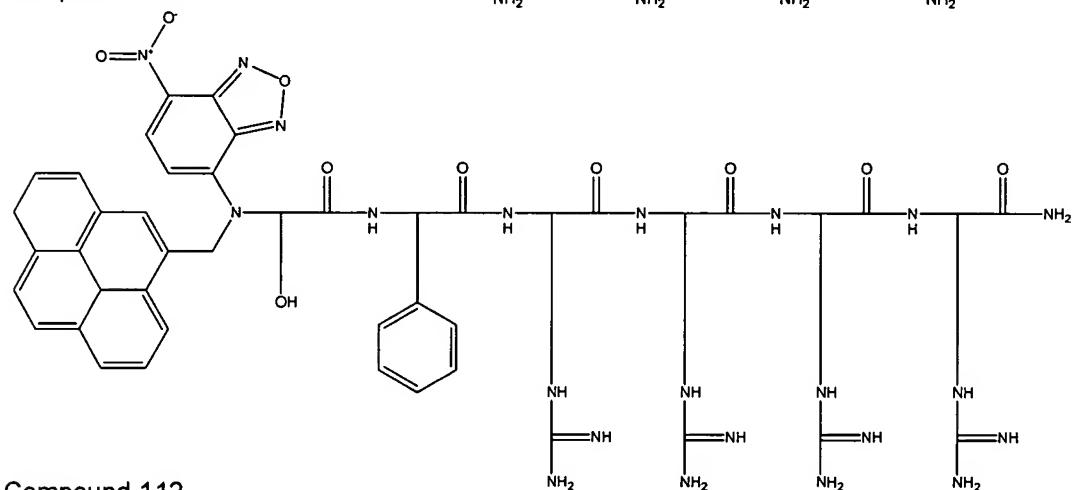


Compound 110

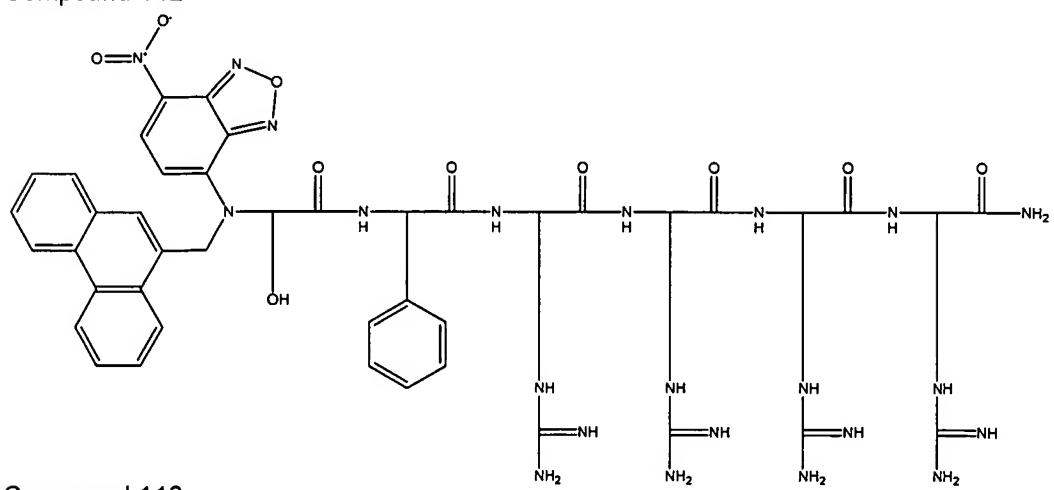
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Compound 111

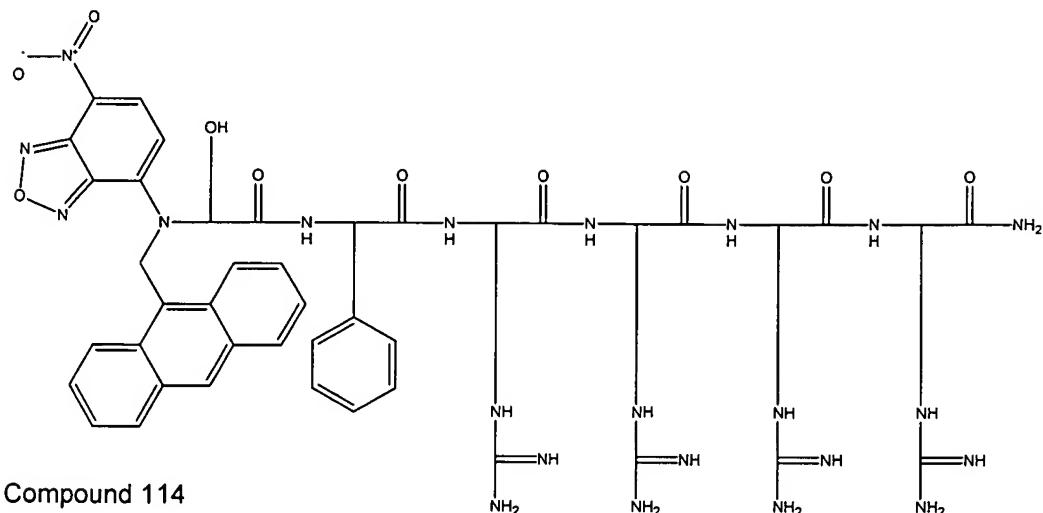


Compound 112

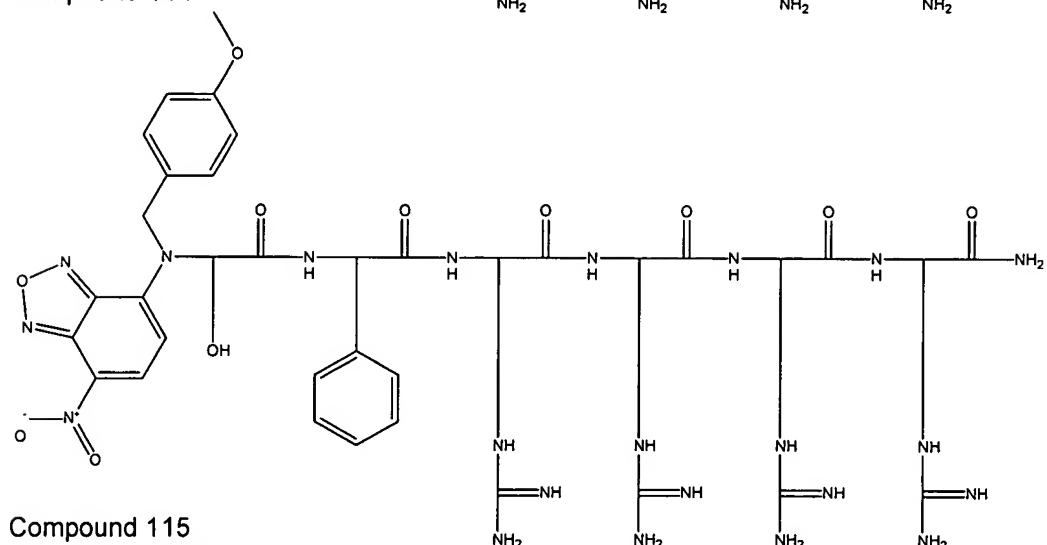


Compound 113

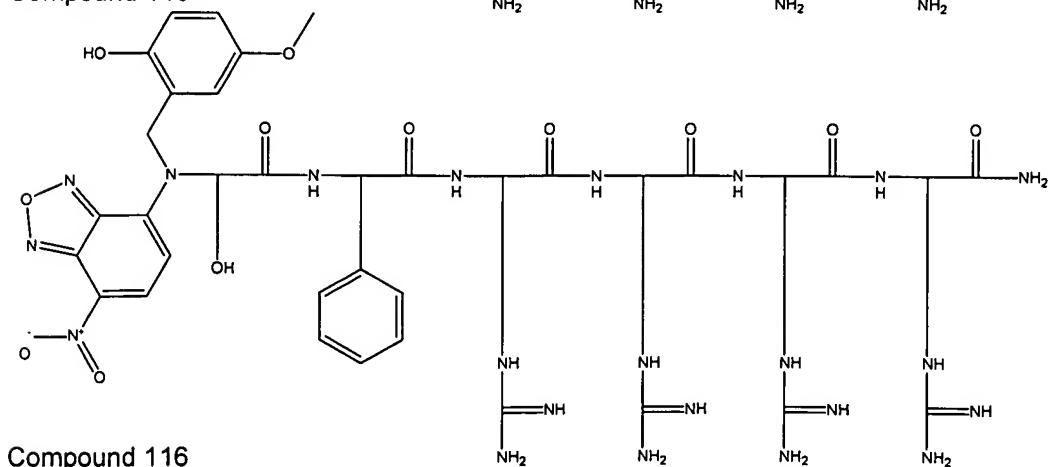
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Compound 114

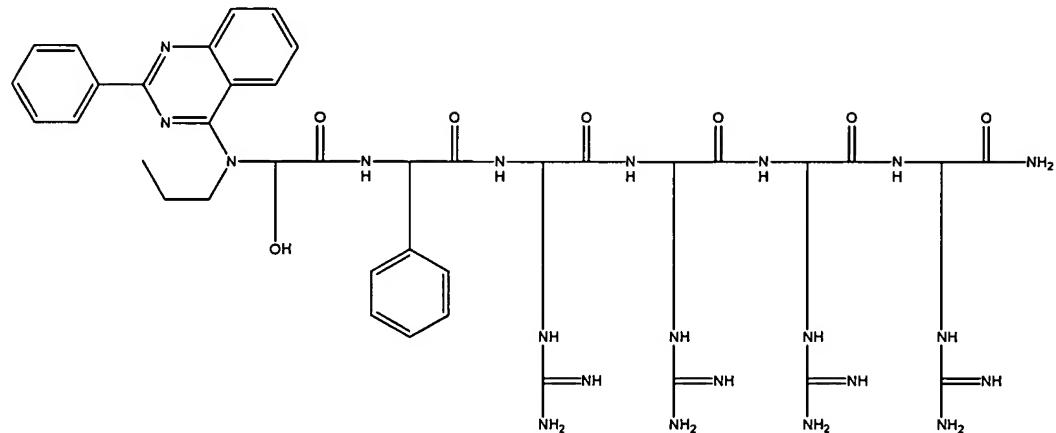


Compound 115

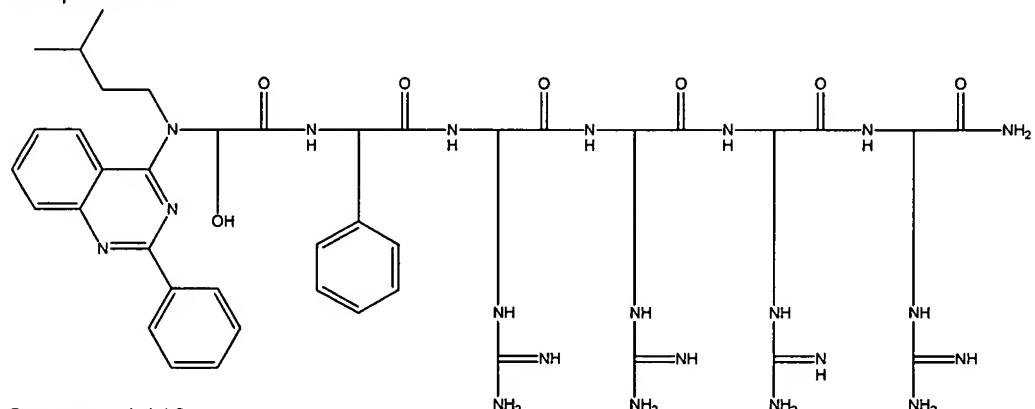


Compound 116

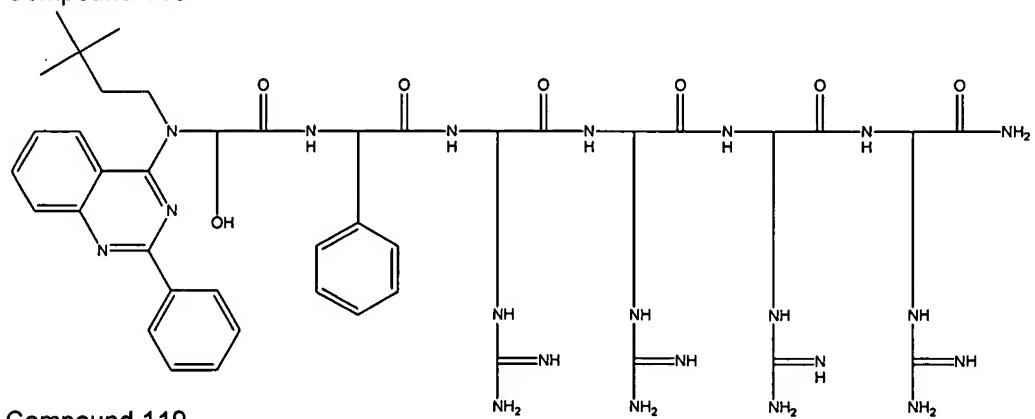
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Compound 117

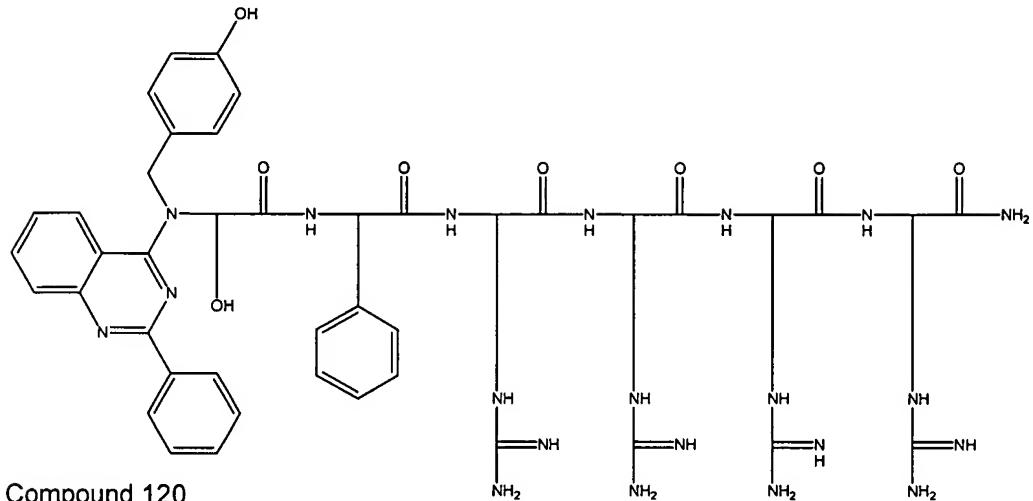


Compound 118

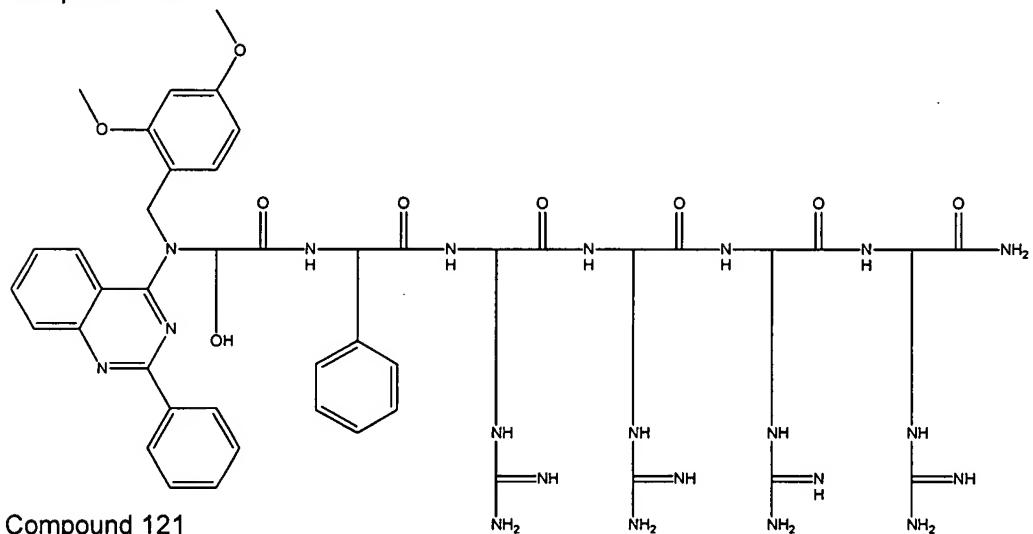


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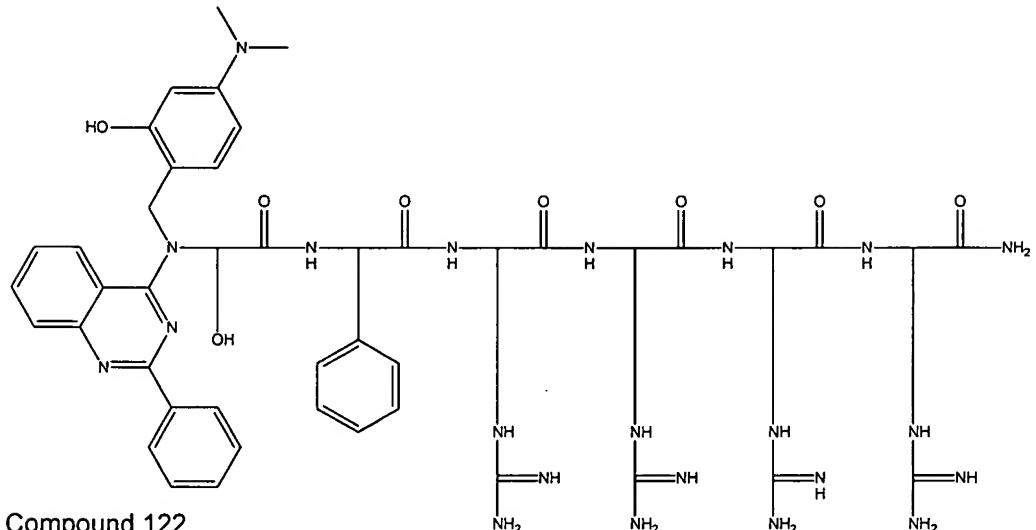


Compound 120

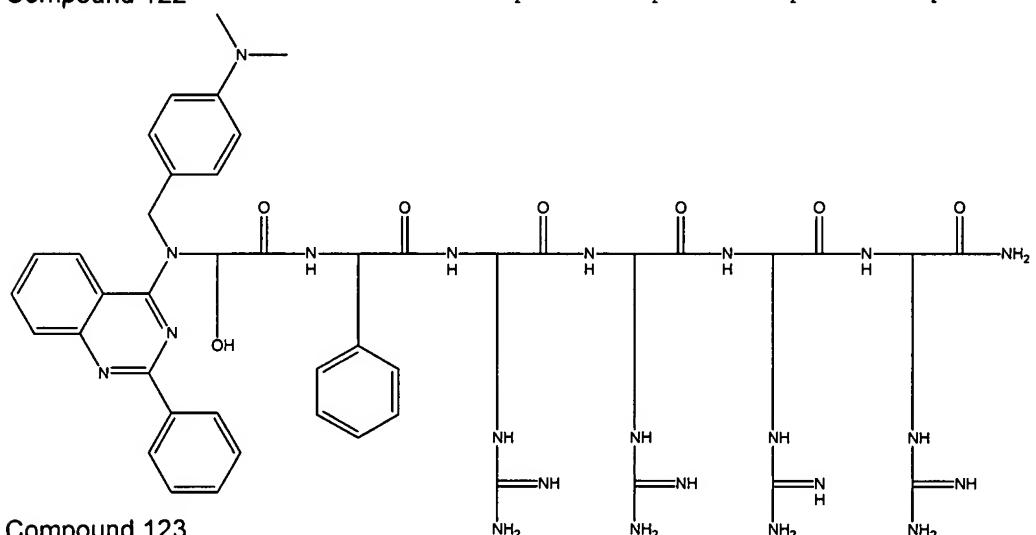


Compound 121

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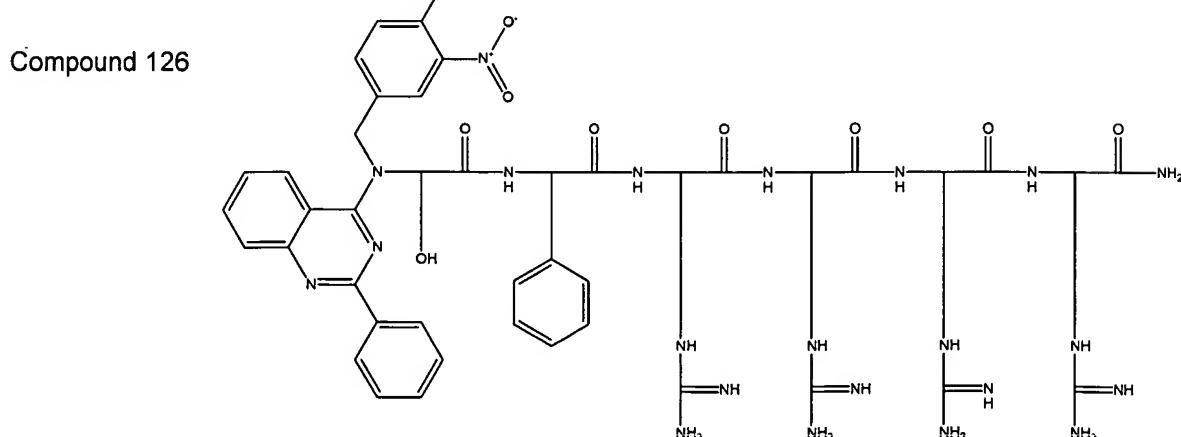
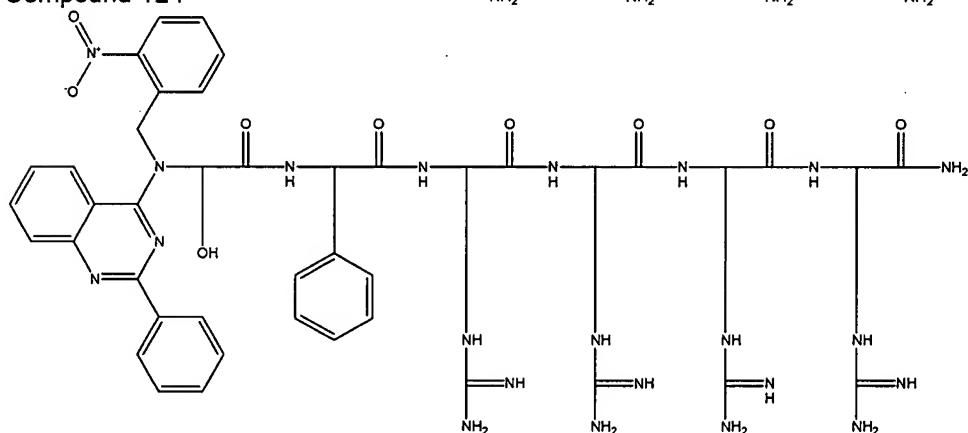
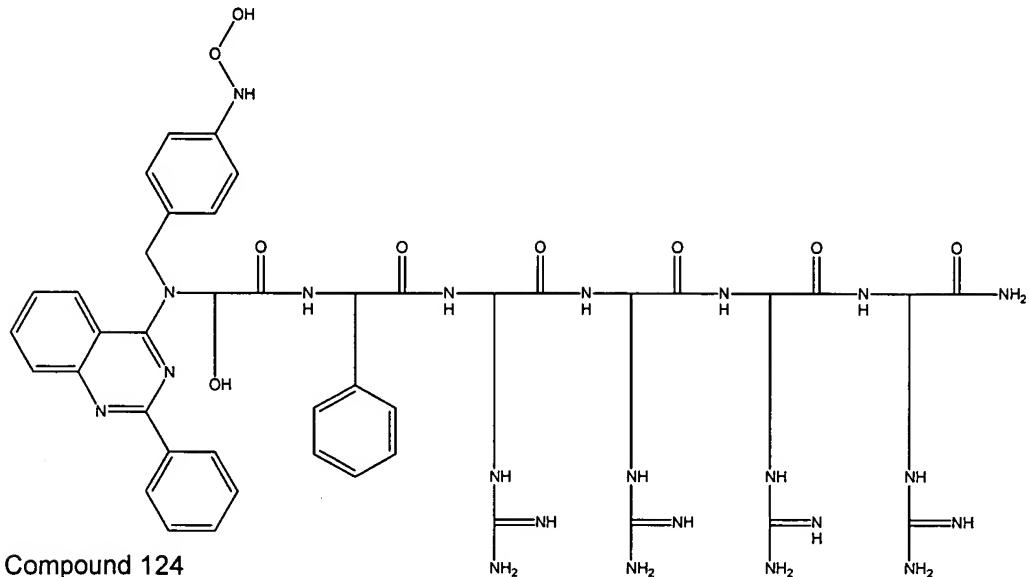


Compound 122

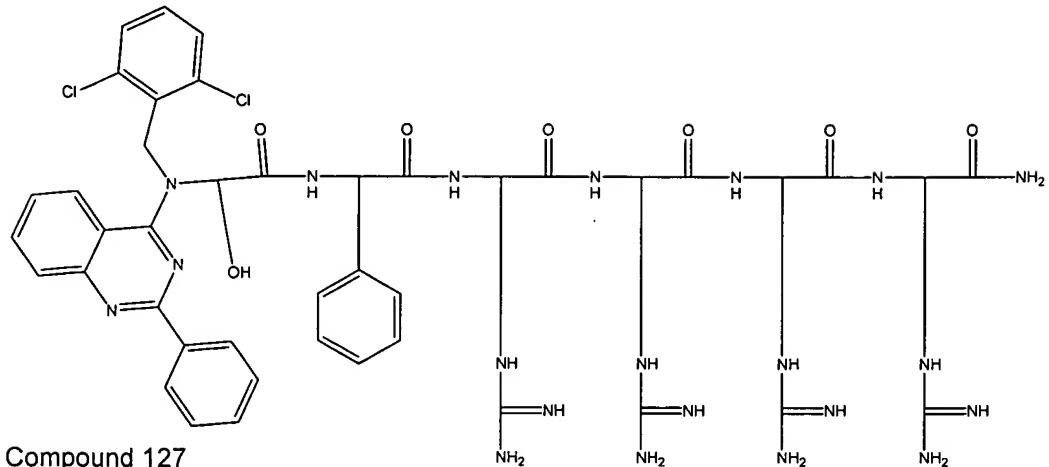


Compound 123

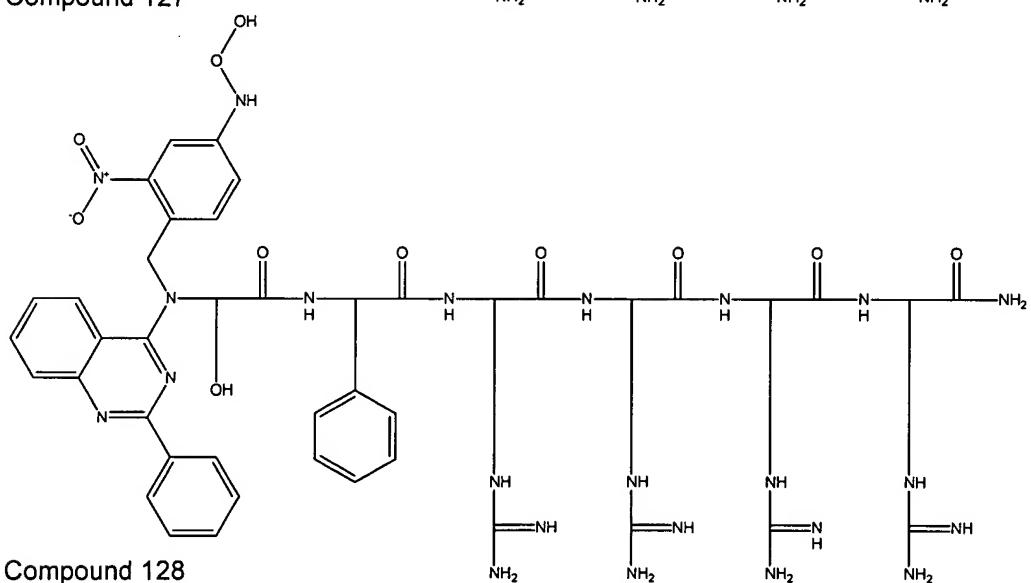
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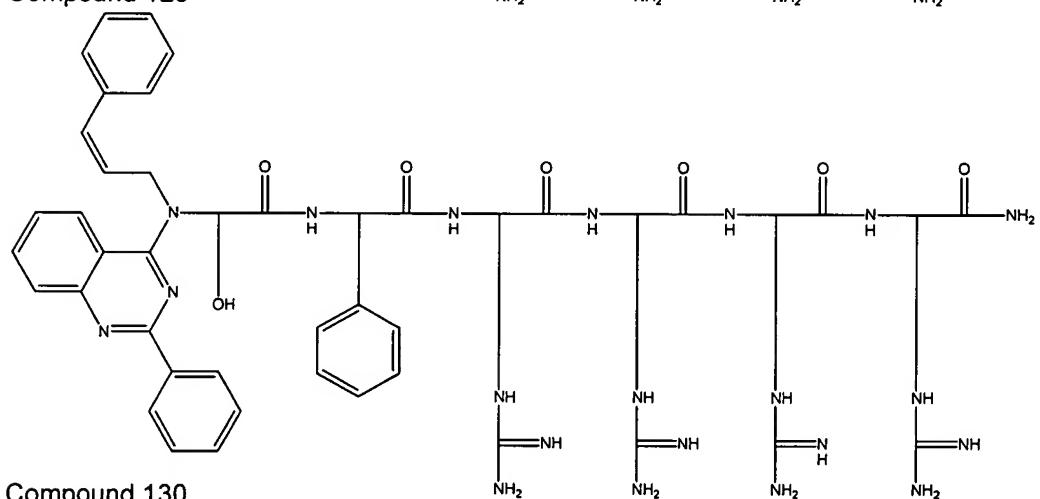
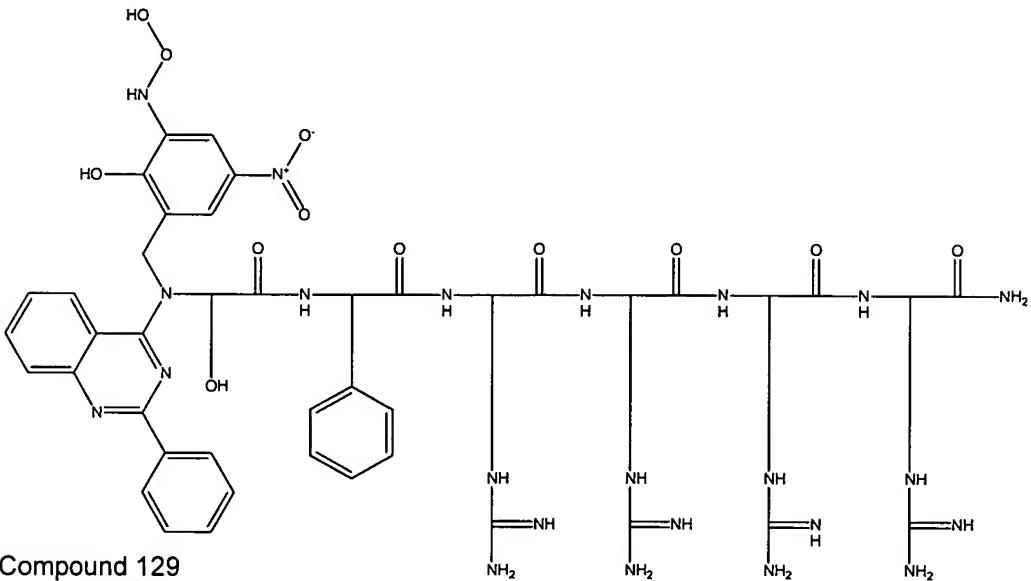


Compound 127

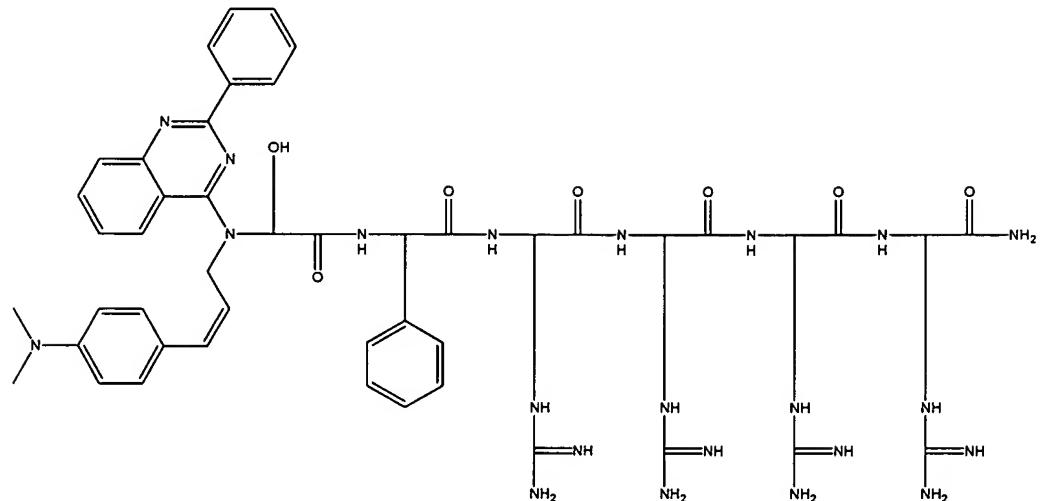


Compound 128

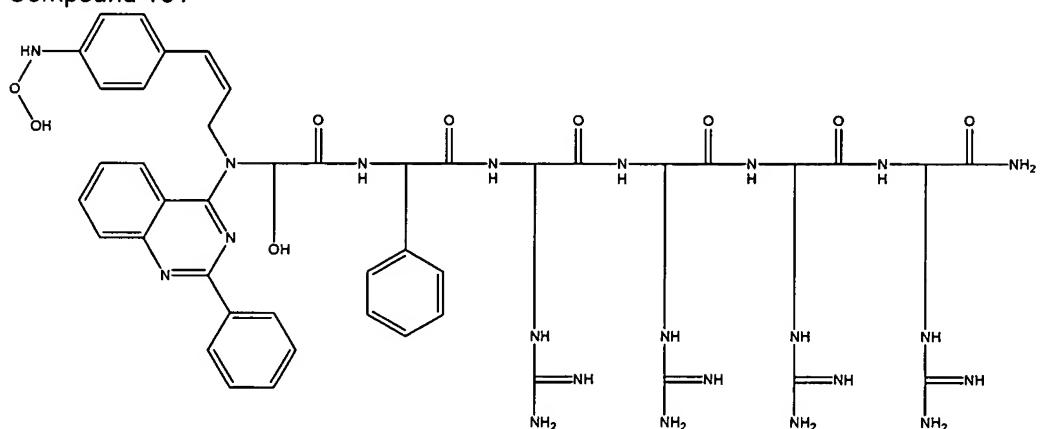
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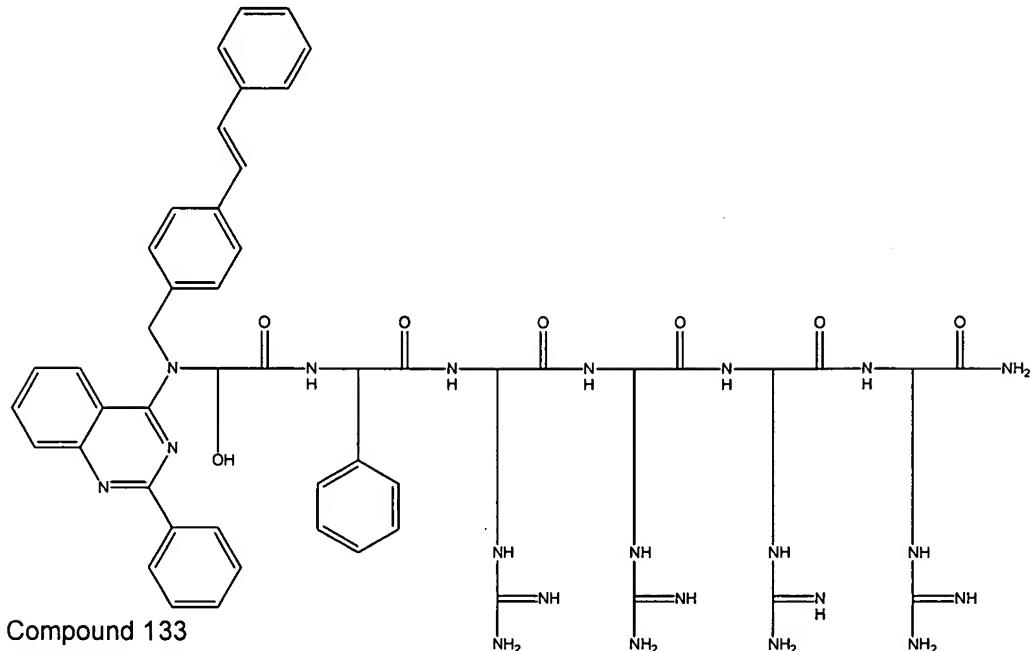


Compound 131

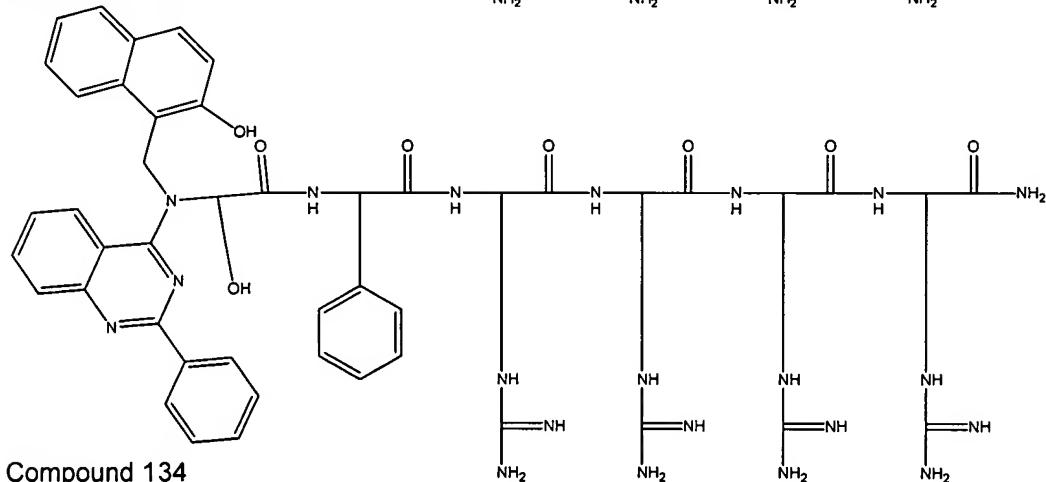


Compound 132

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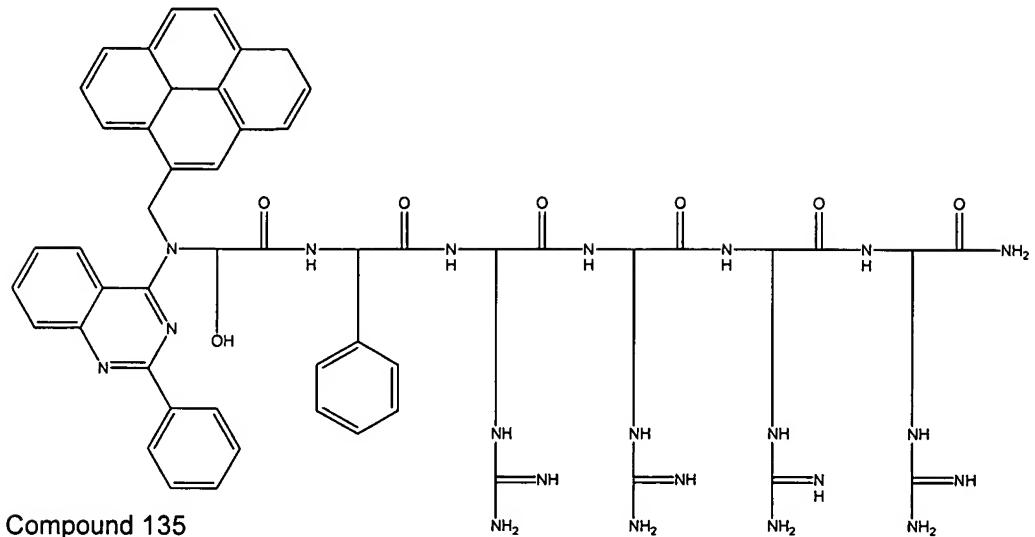


Compound 133

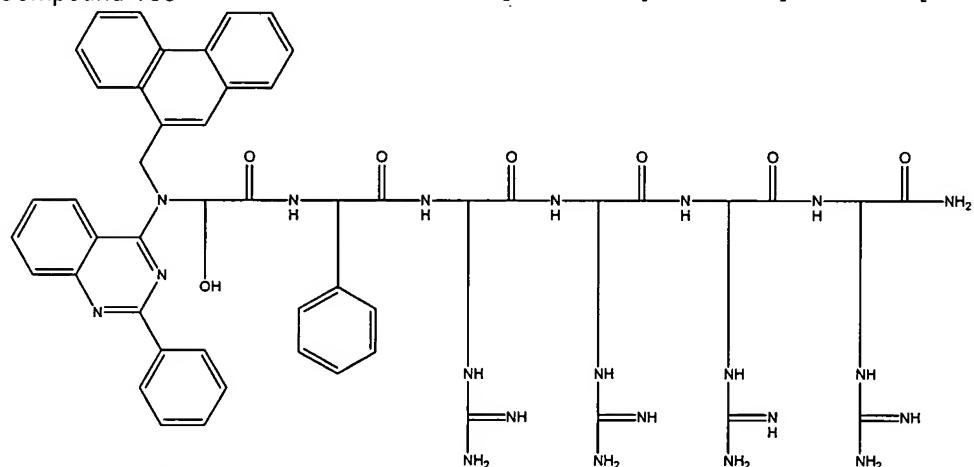


Compound 134

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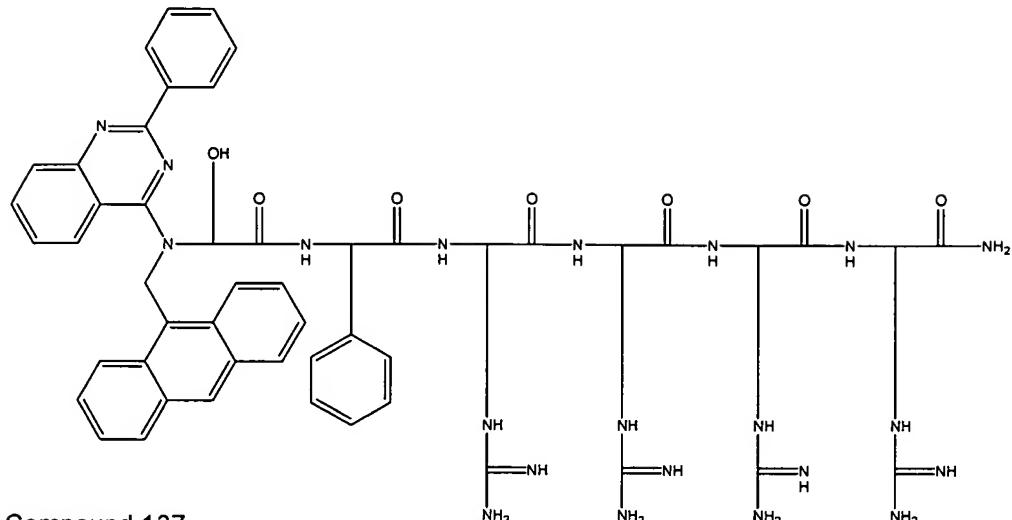


Compound 135

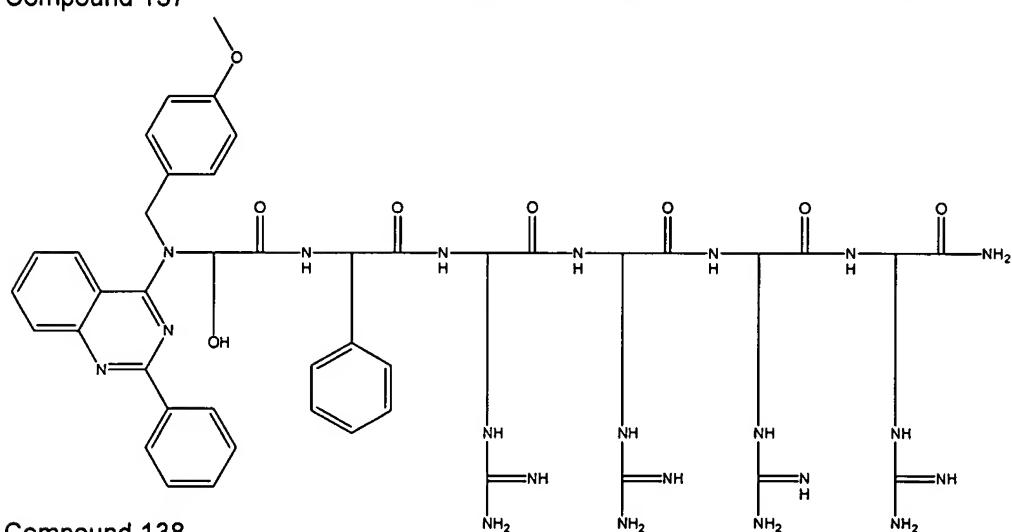


Compound 136

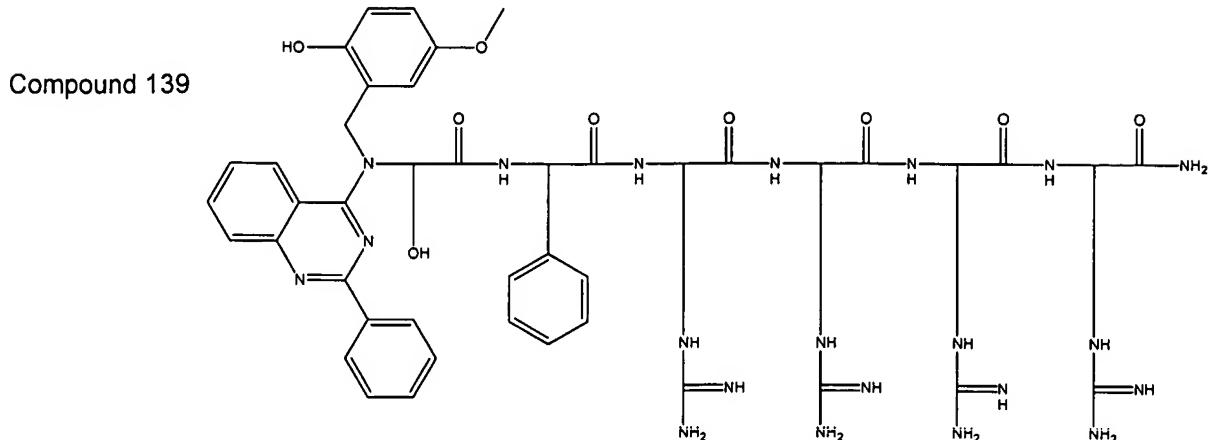
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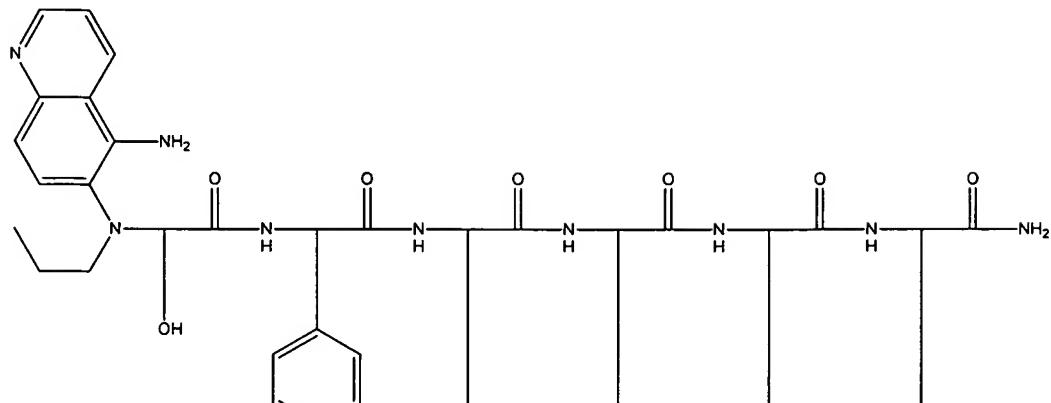
Compound 137



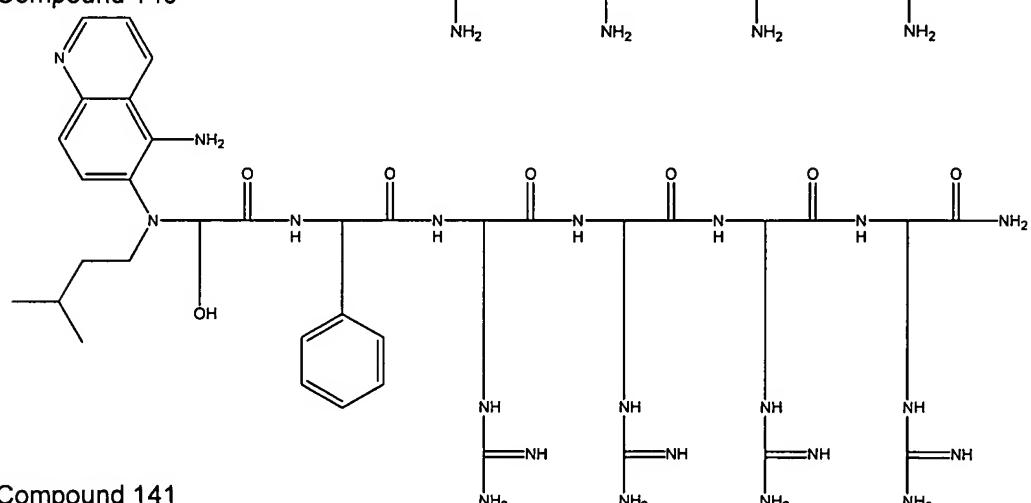
Compound 138



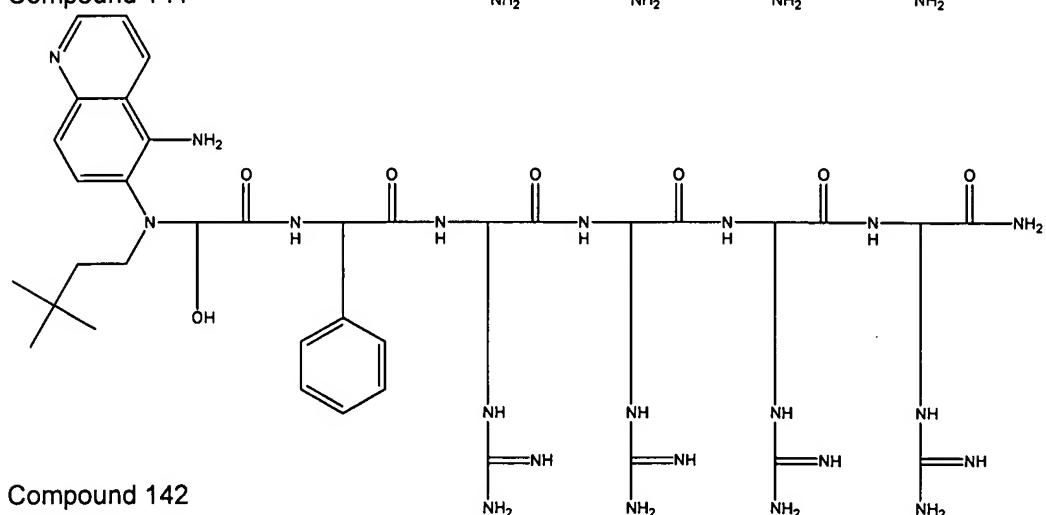
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Compound 140

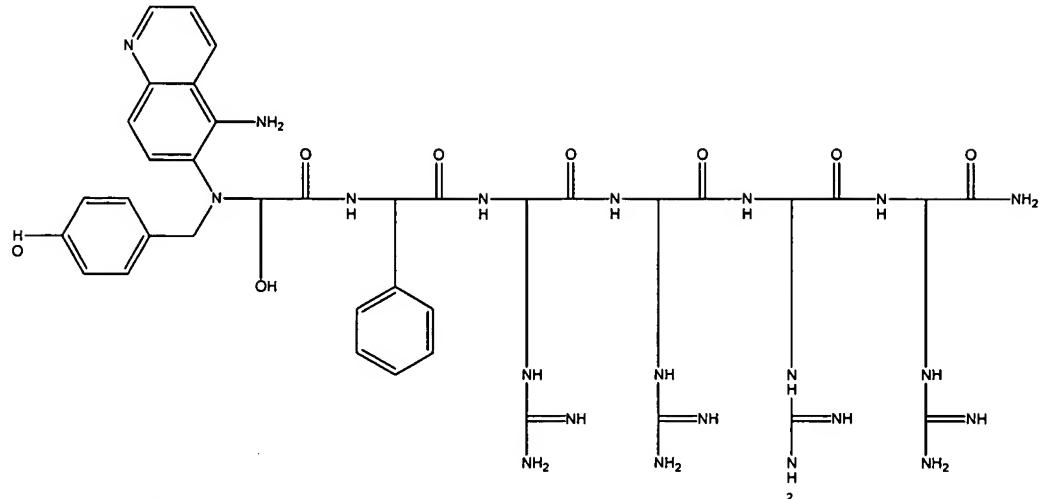


Compound 141

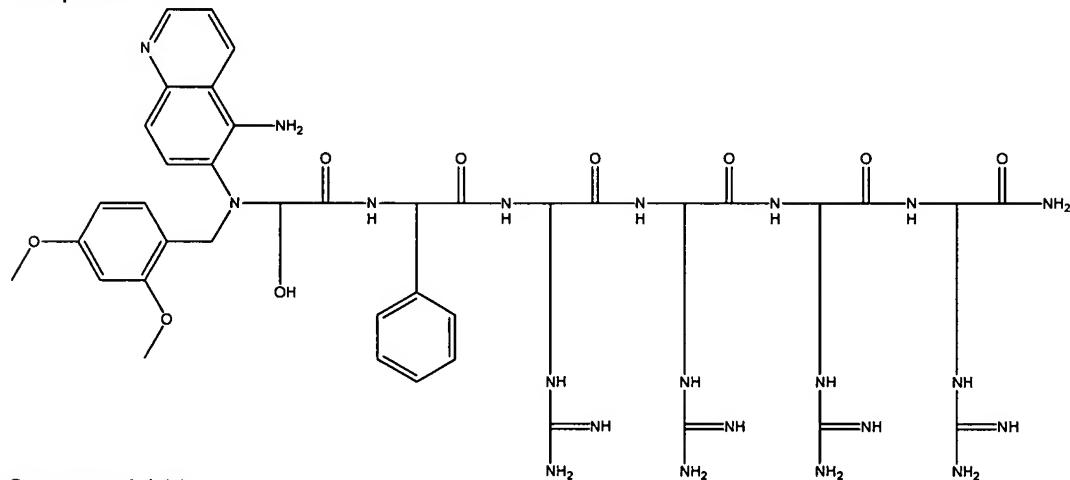


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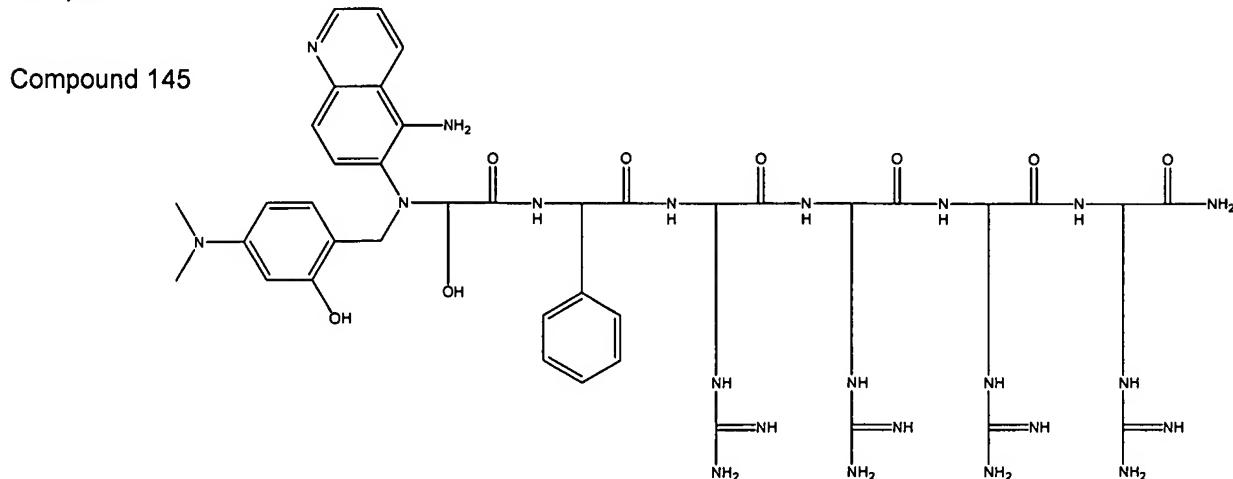
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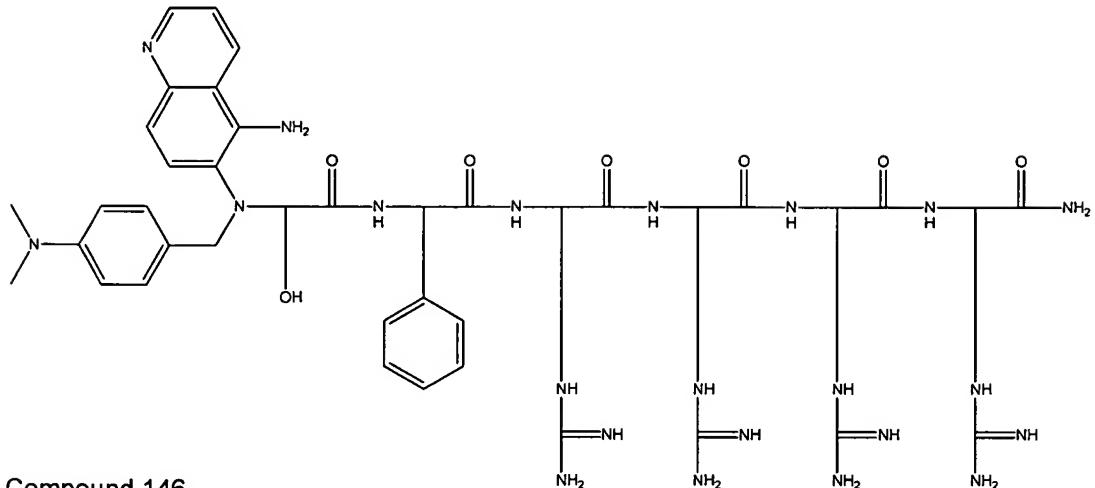
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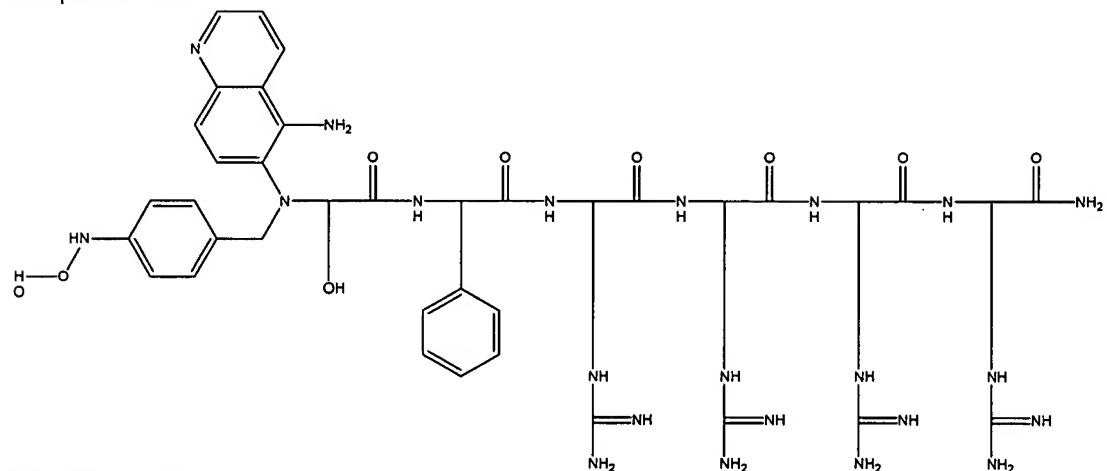
Compound 144



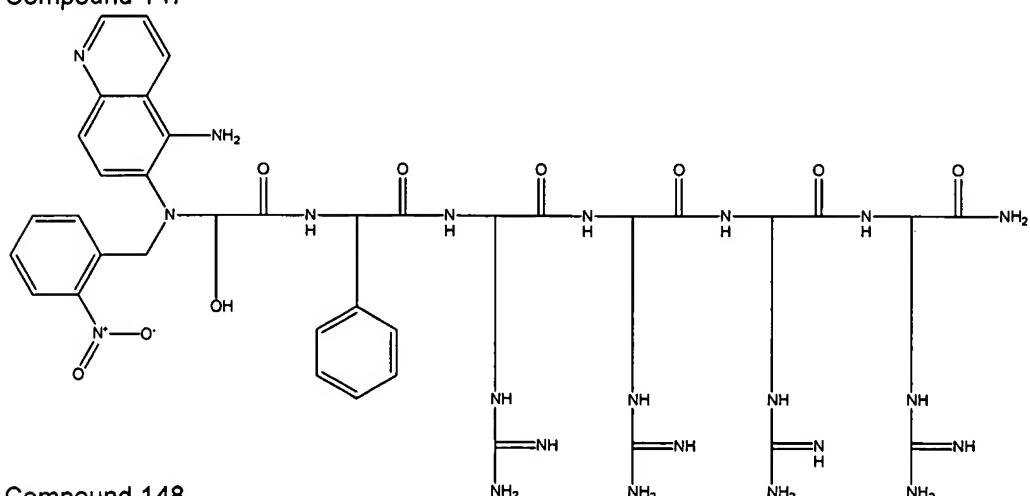
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Compound 146

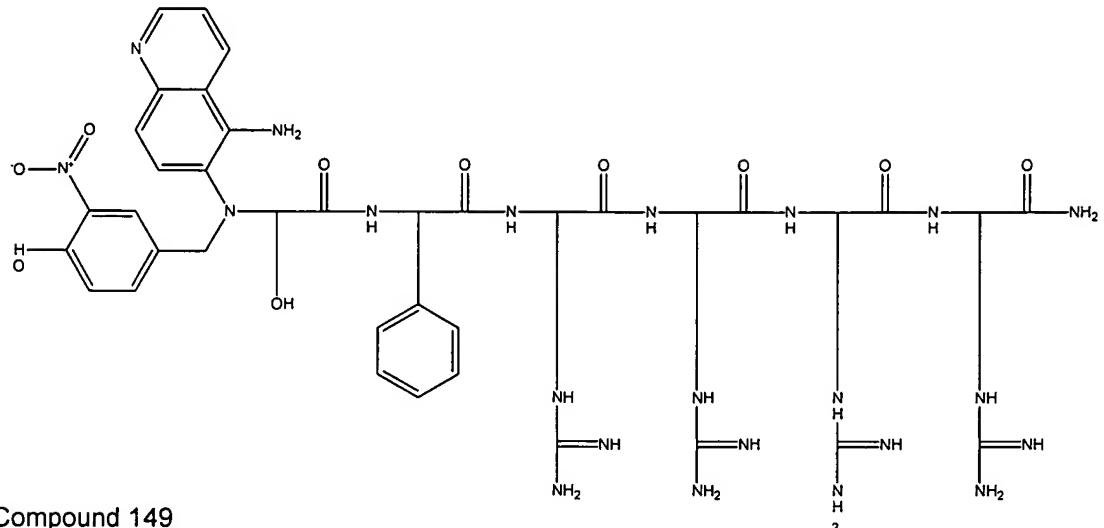


Compound 147

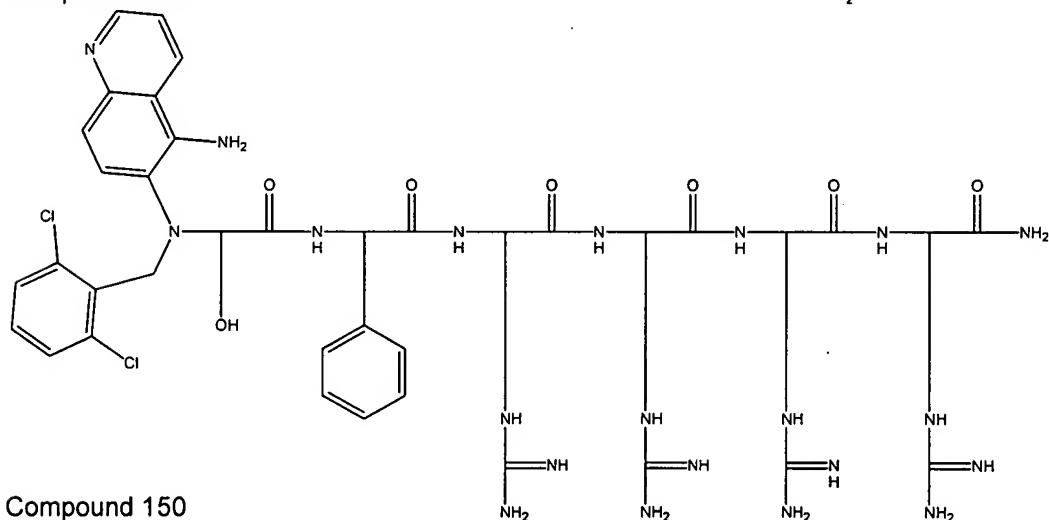


Compound 148

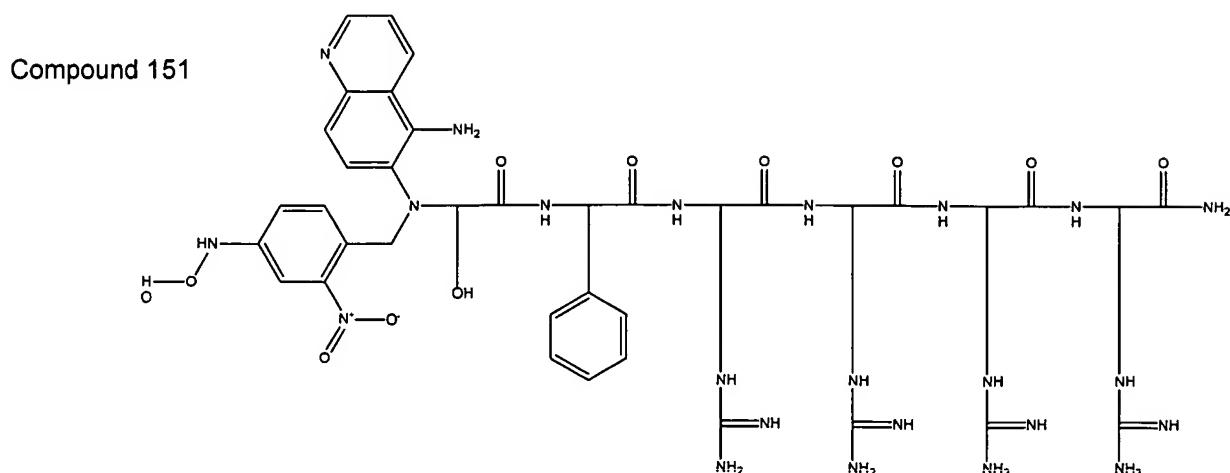
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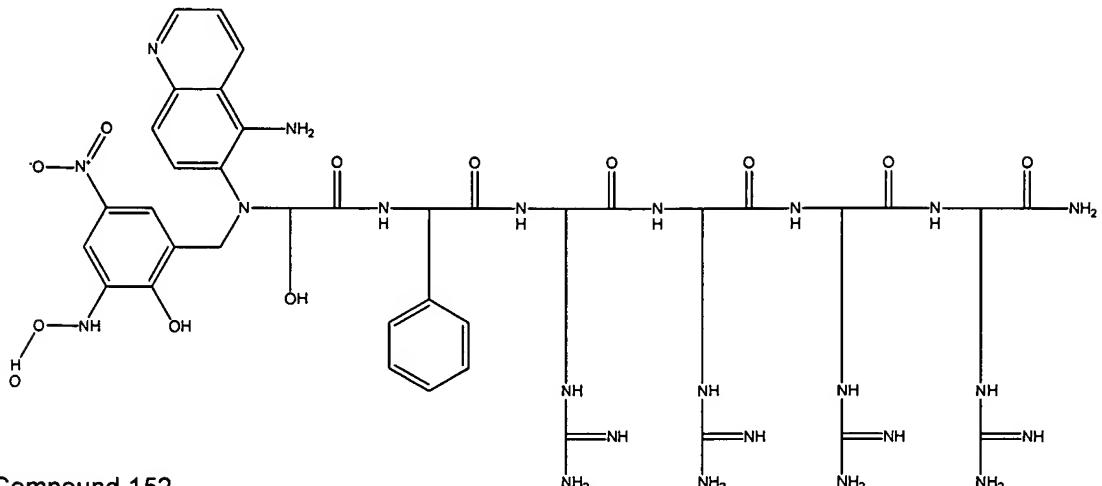
Compound 149



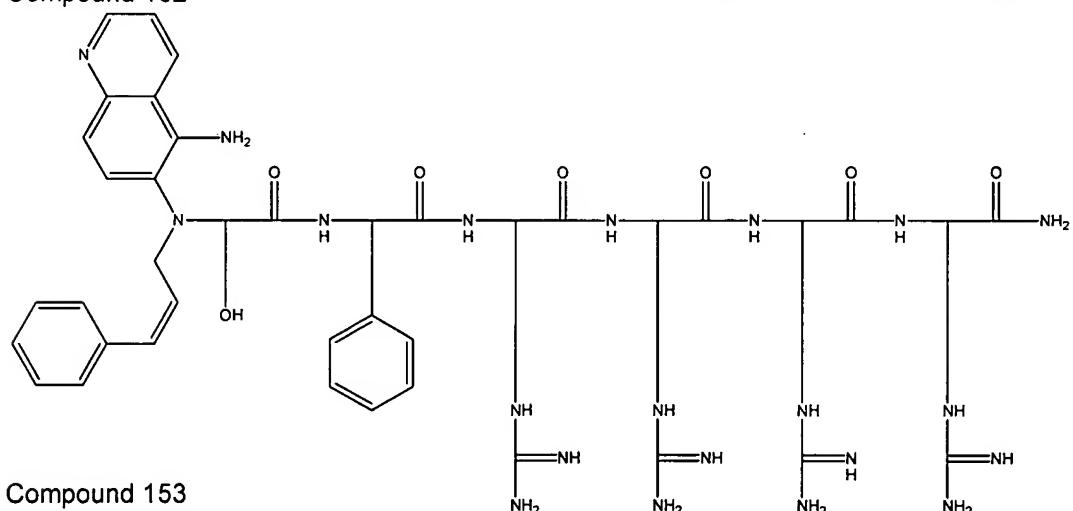
Compound 150



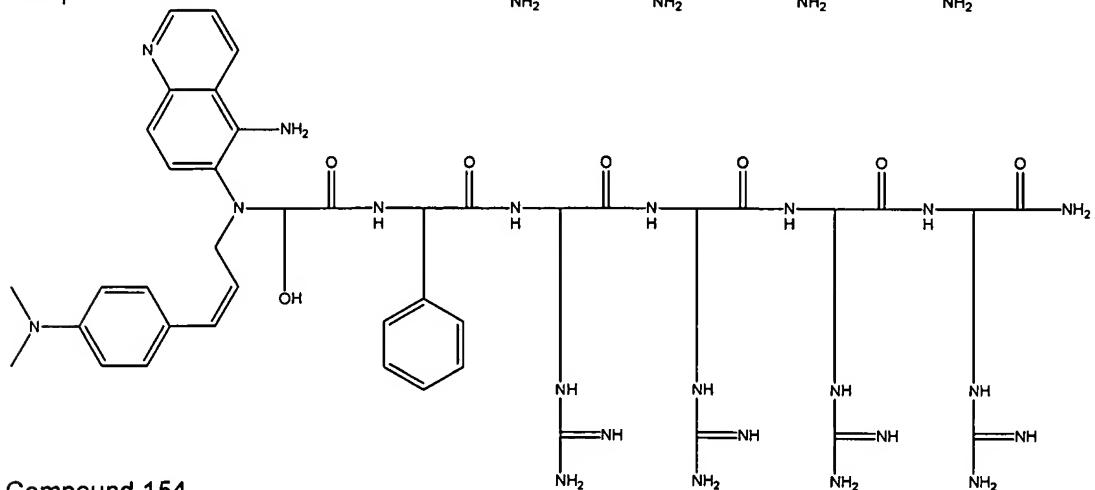
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Compound 152

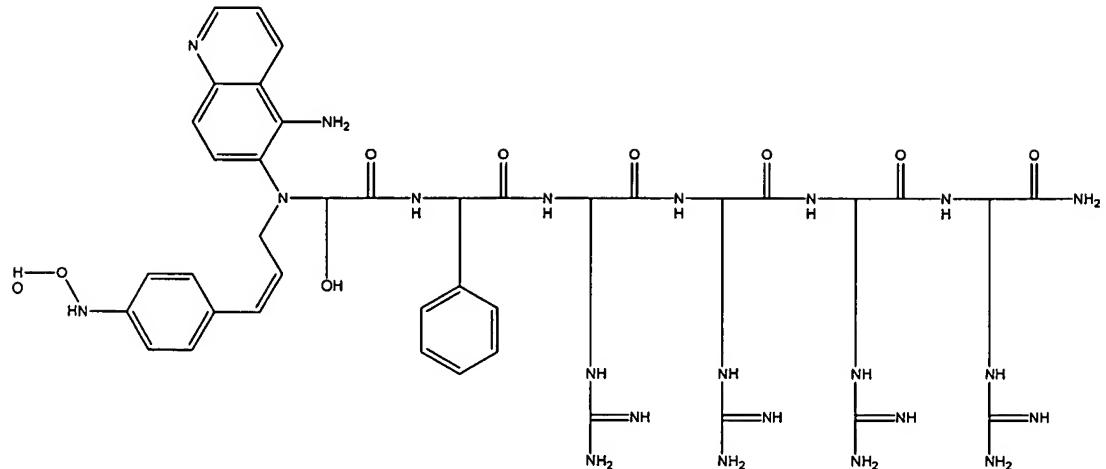


Compound 153

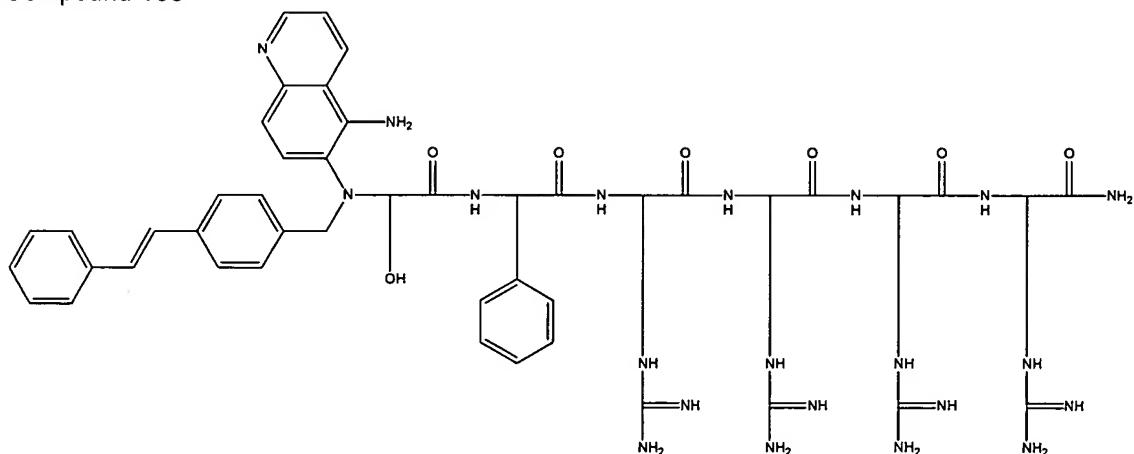


Compound 154

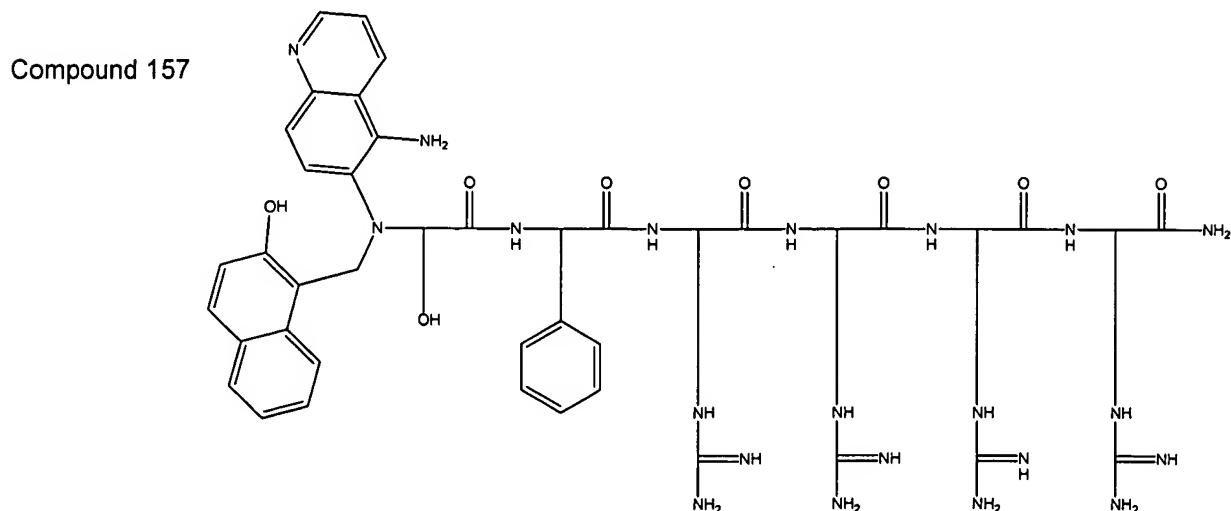
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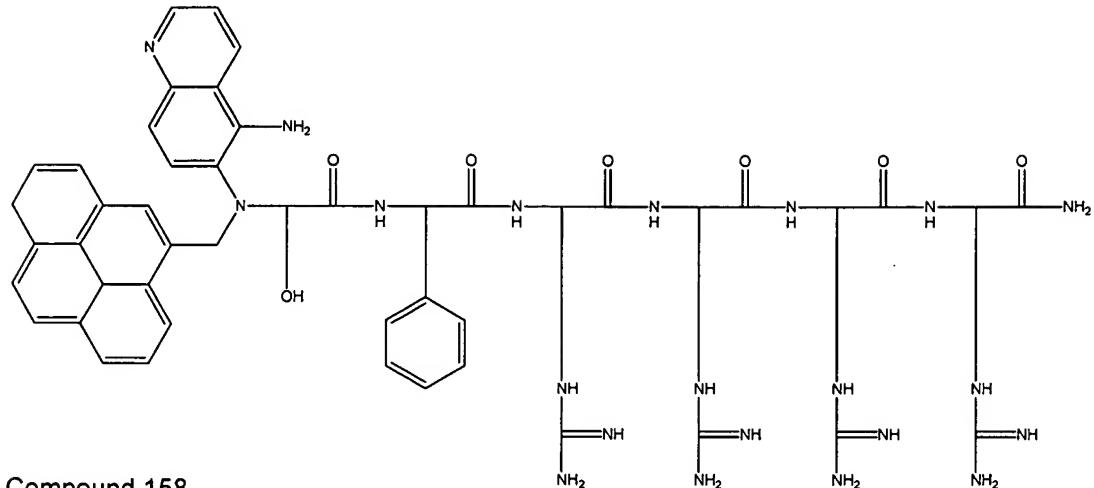
Compound 155



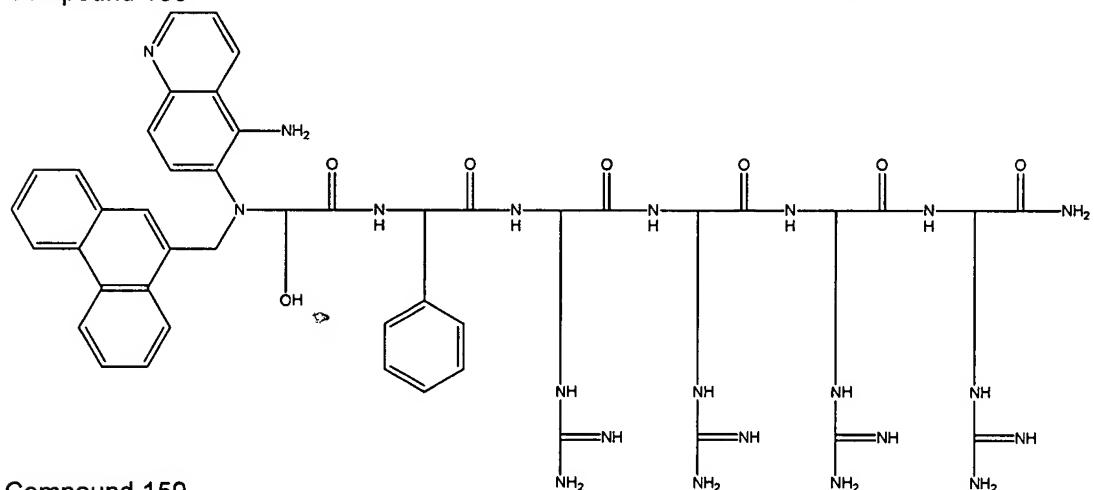
Compound 156



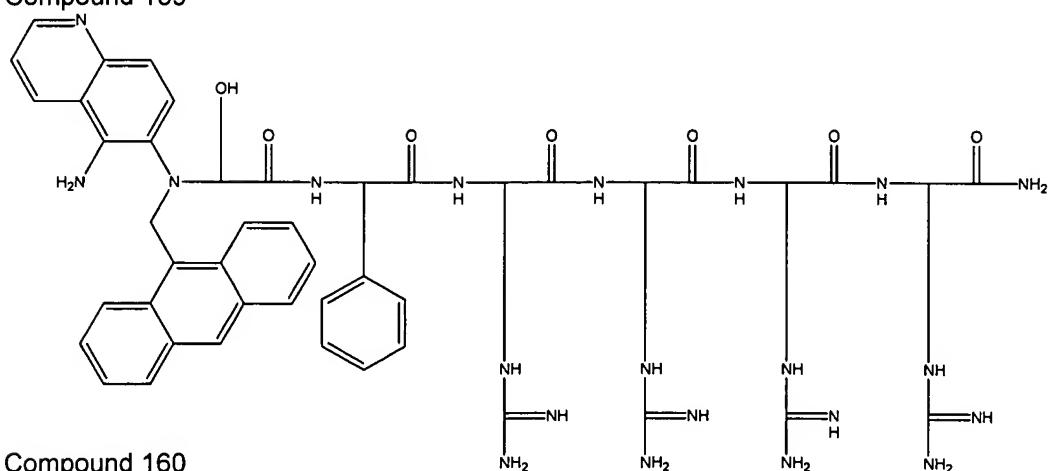
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Compound 158

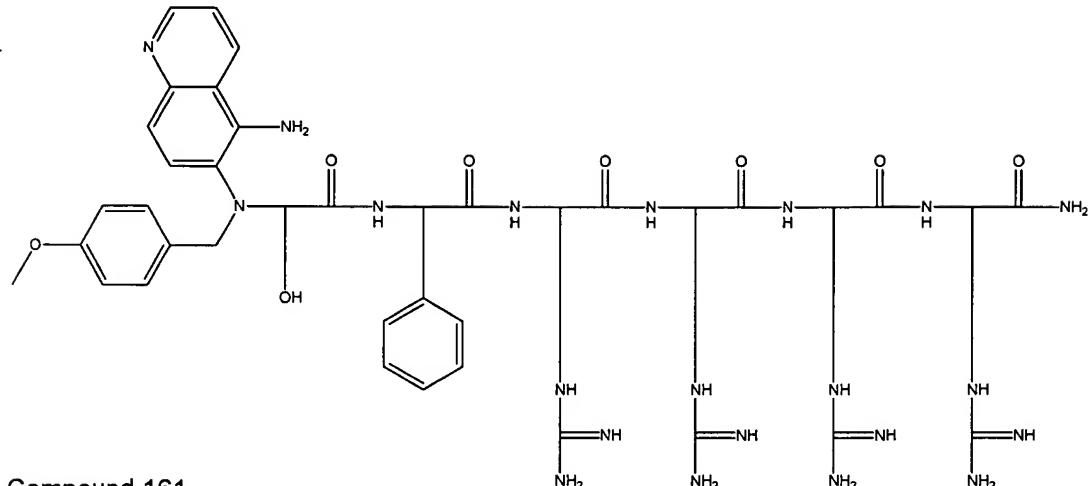


Compound 159

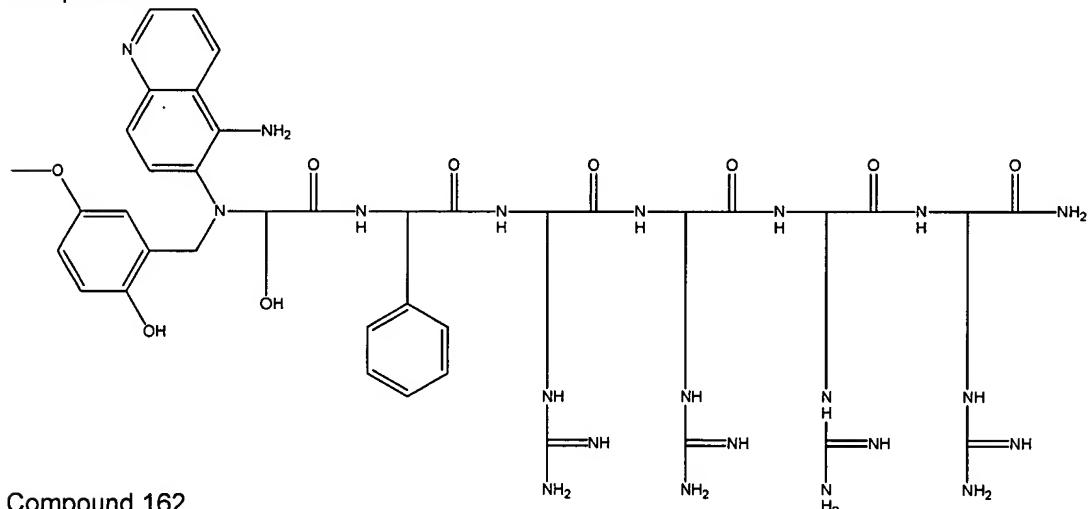


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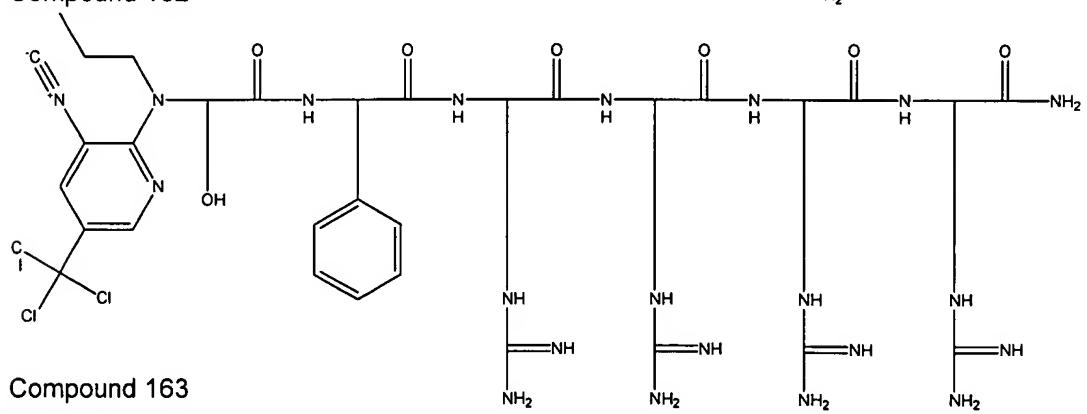
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Compound 161

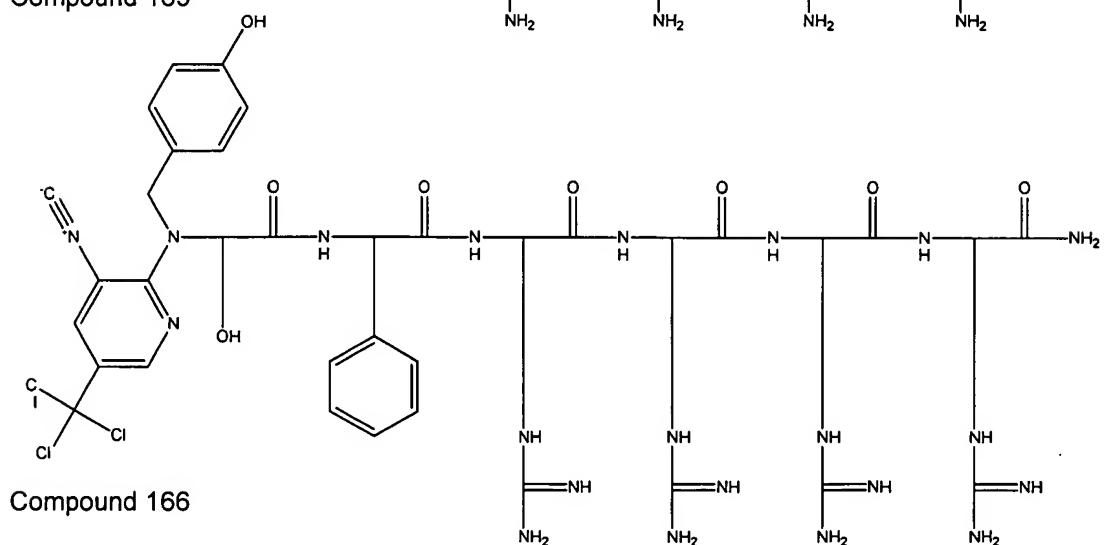
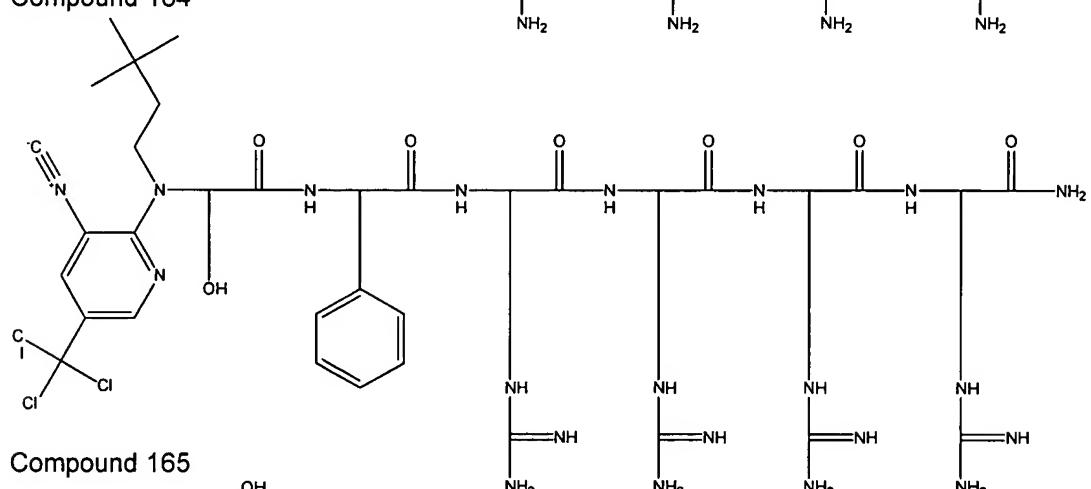
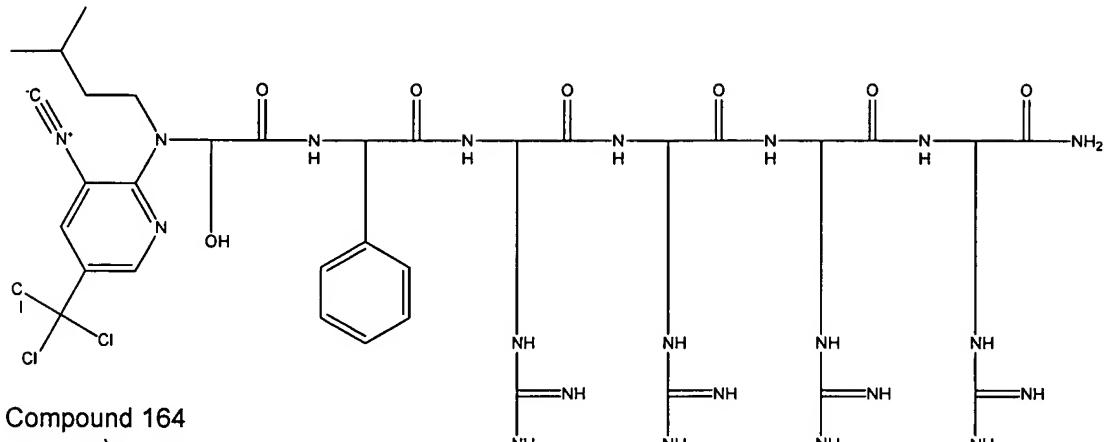


Compound 162

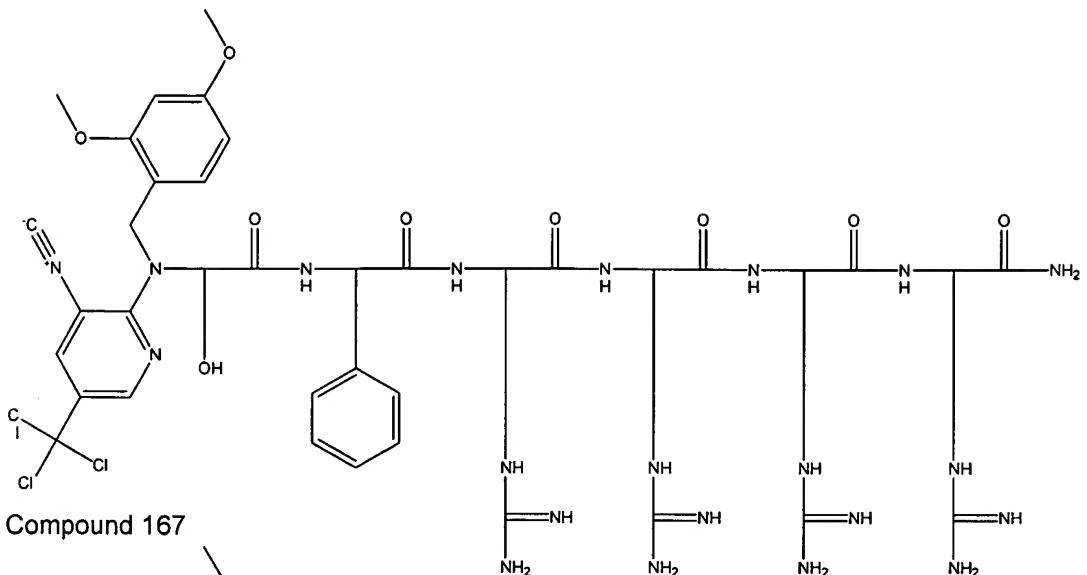


Compound 163

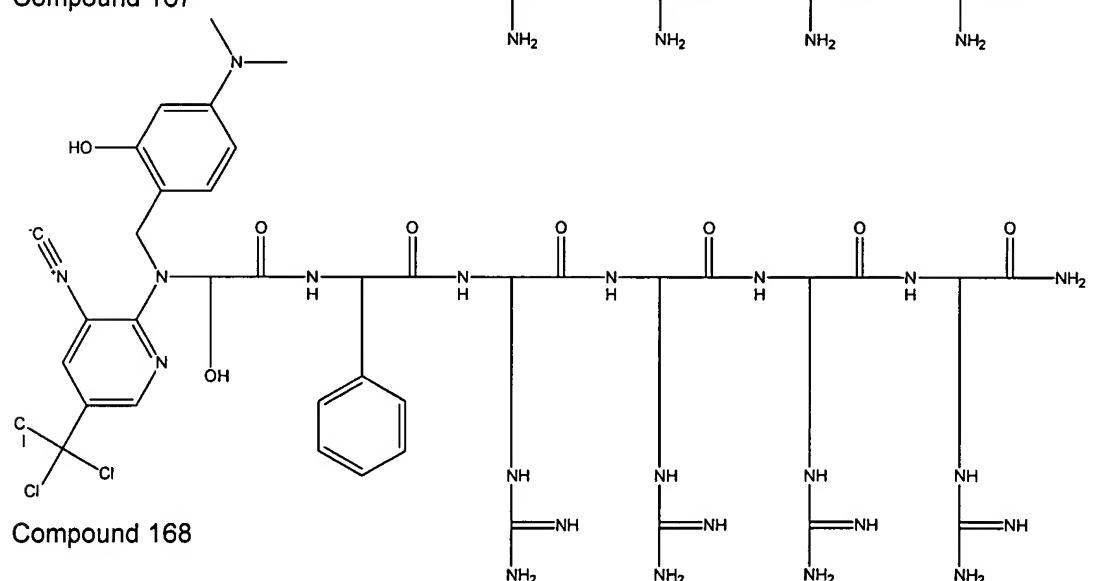
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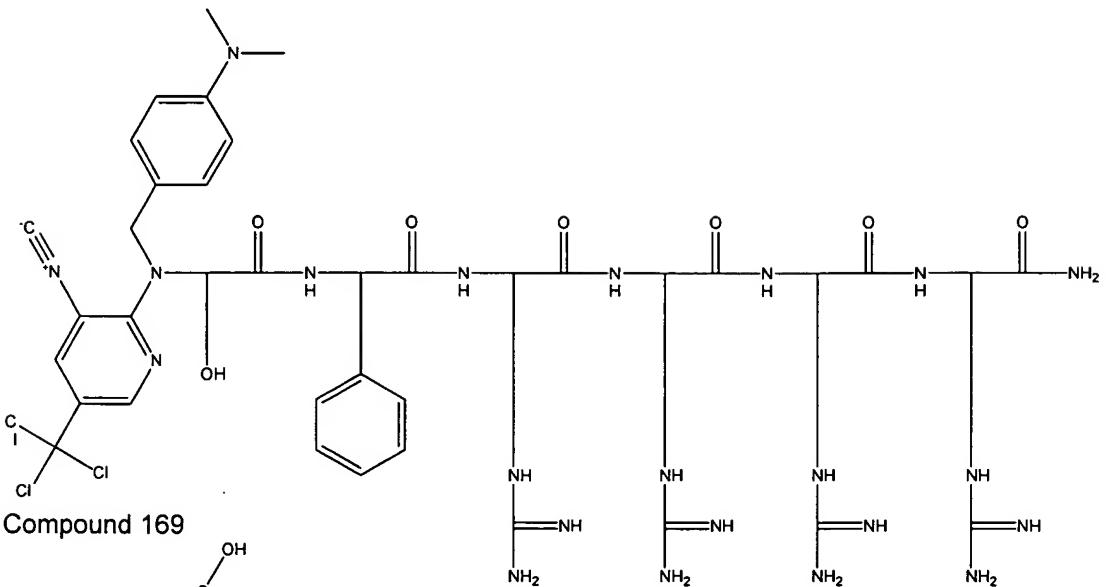


Compound 167

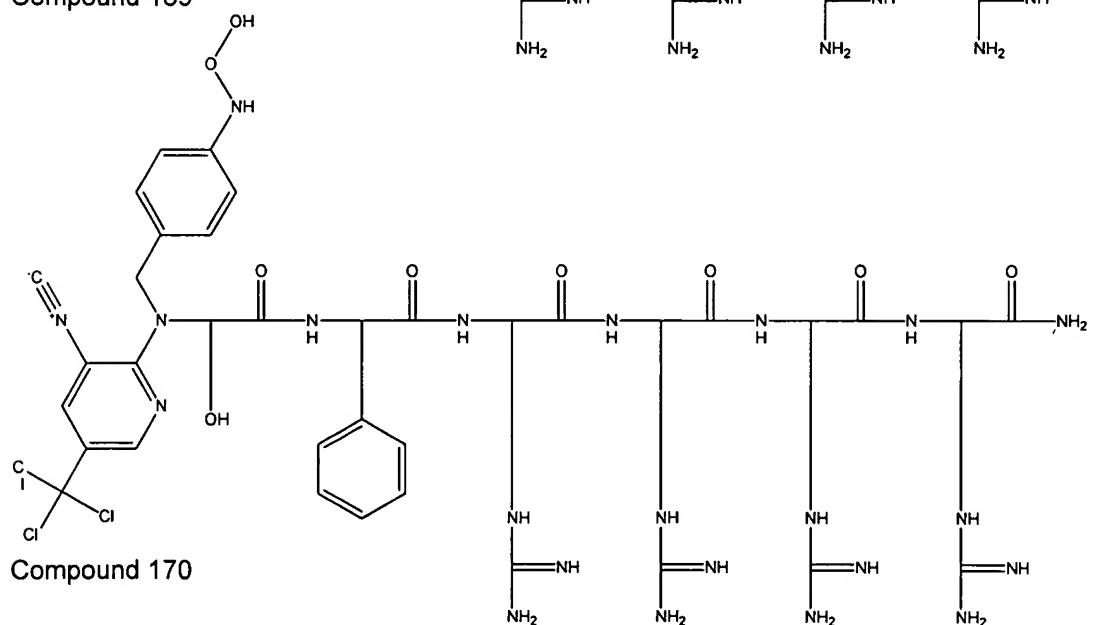


Compound 168

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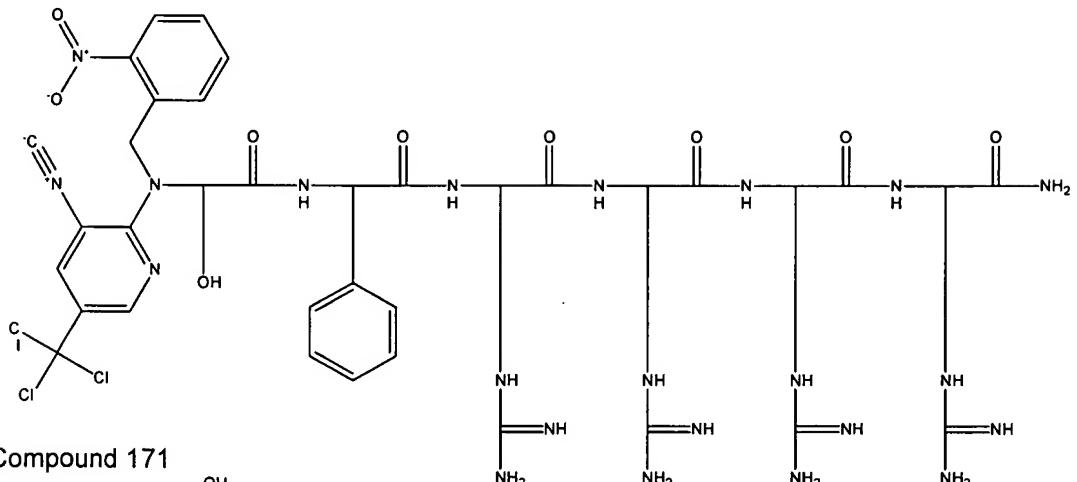


Compound 169

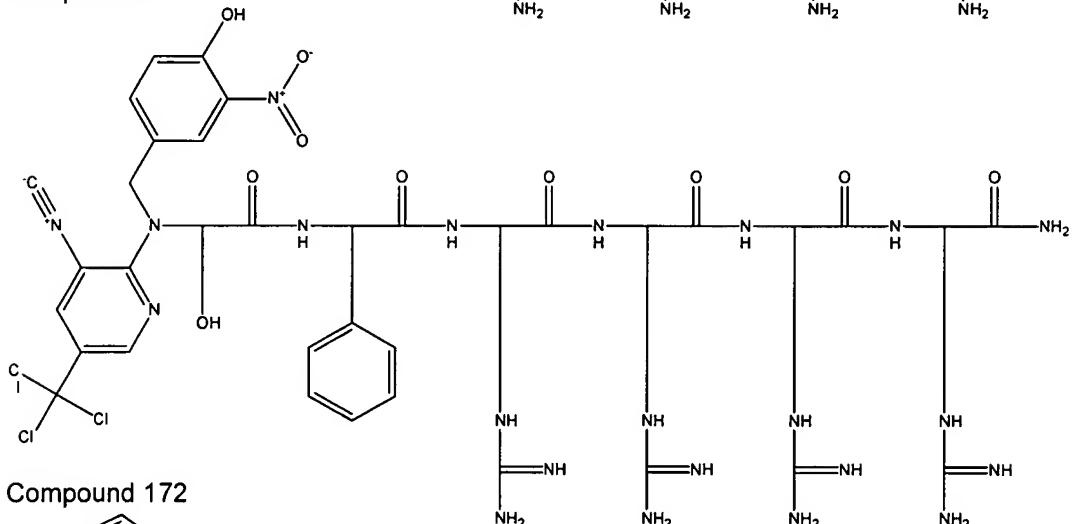


Compound 170

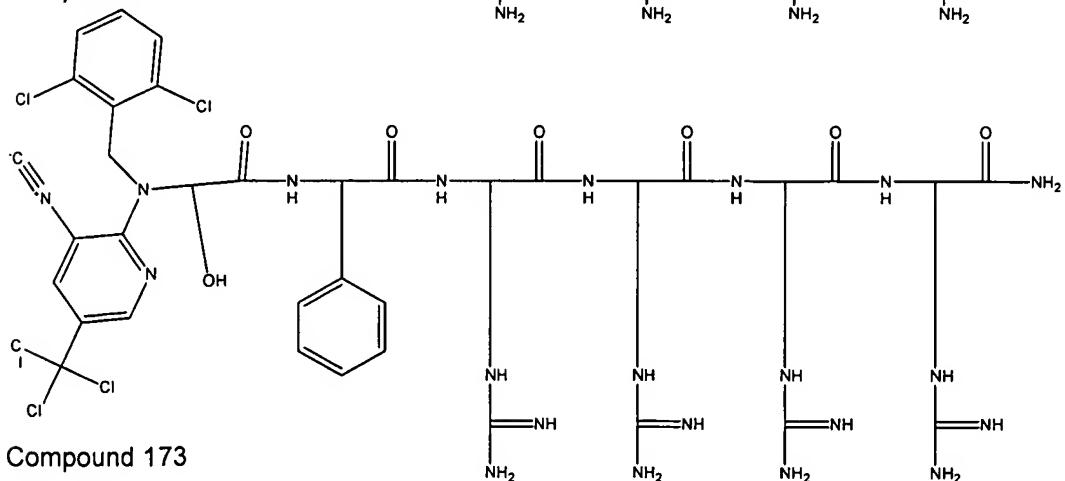
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Compound 171

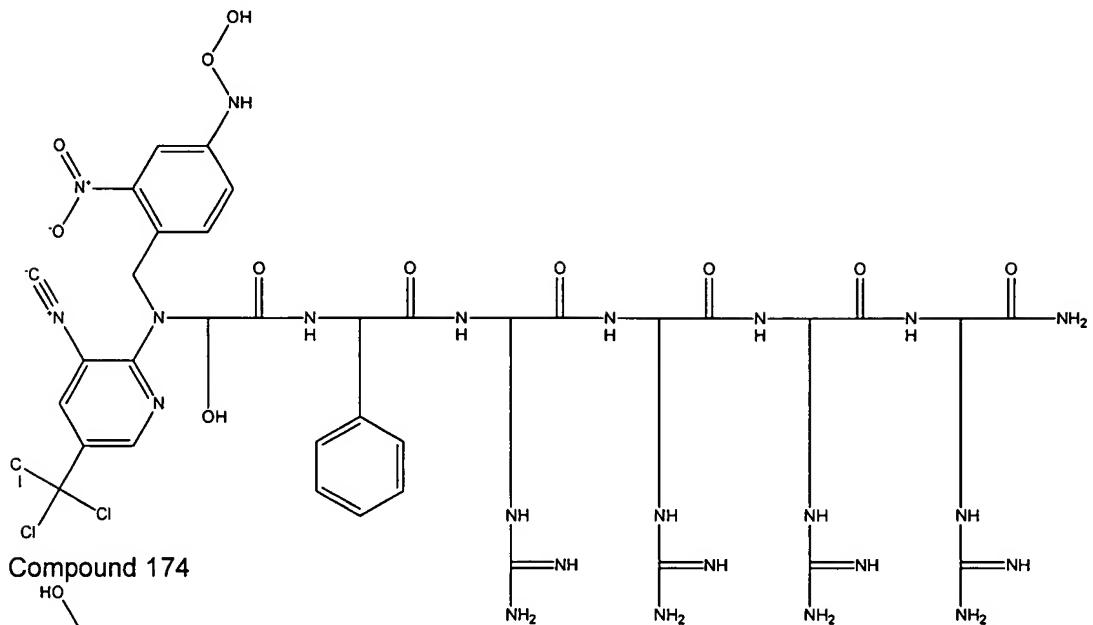


Compound 172

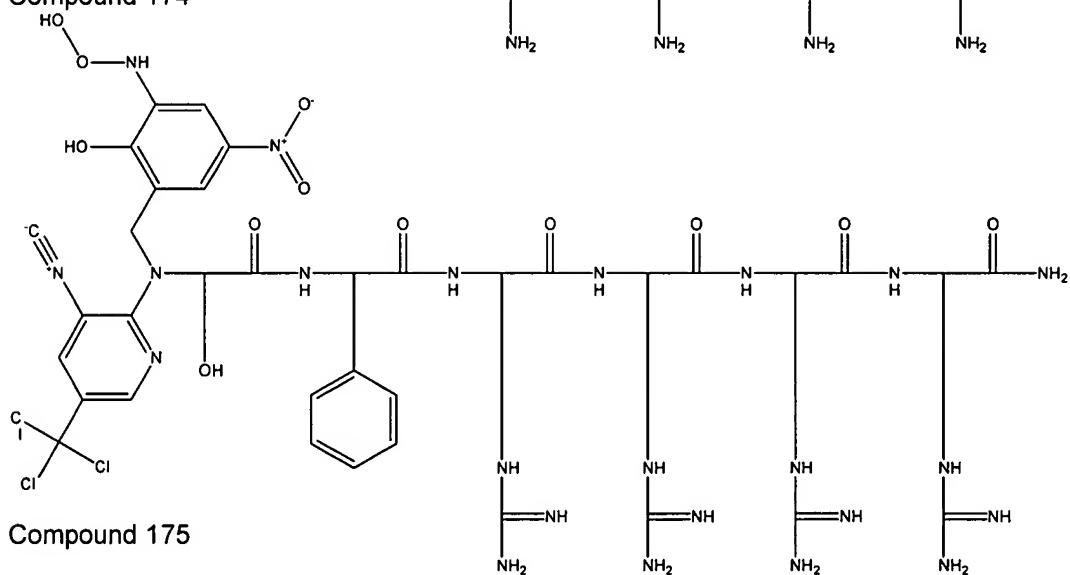


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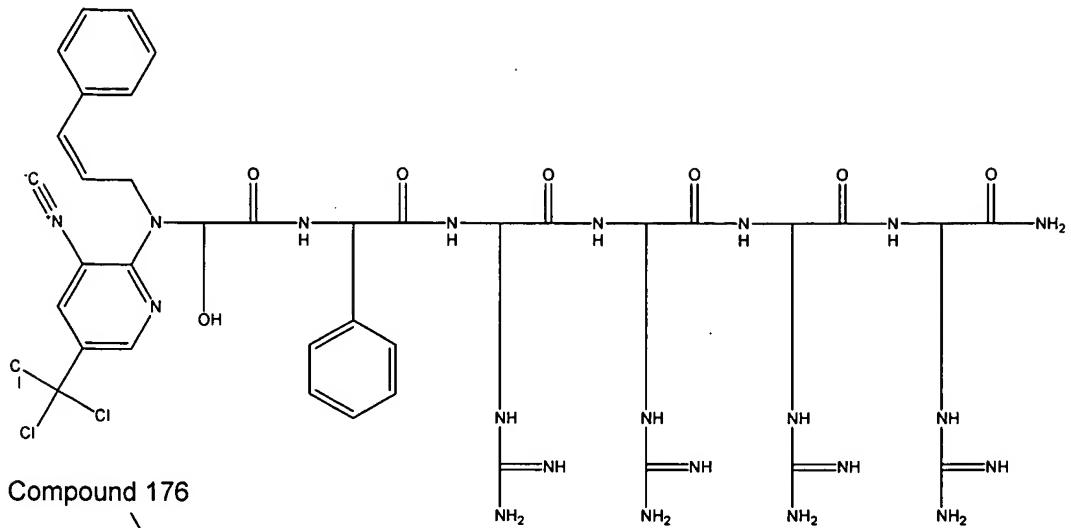


Compound 174

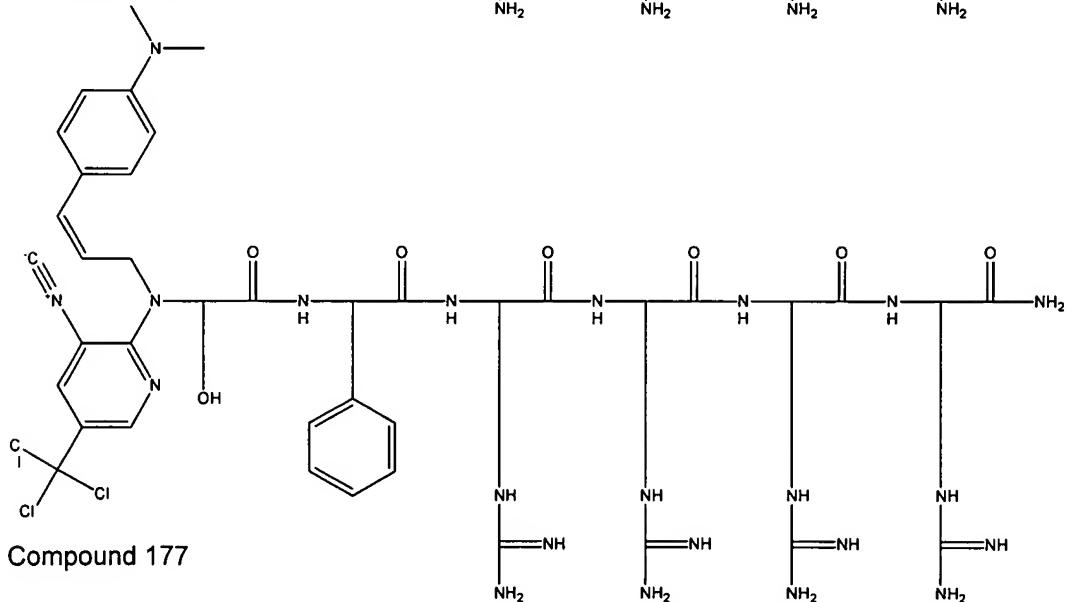


Compound 175

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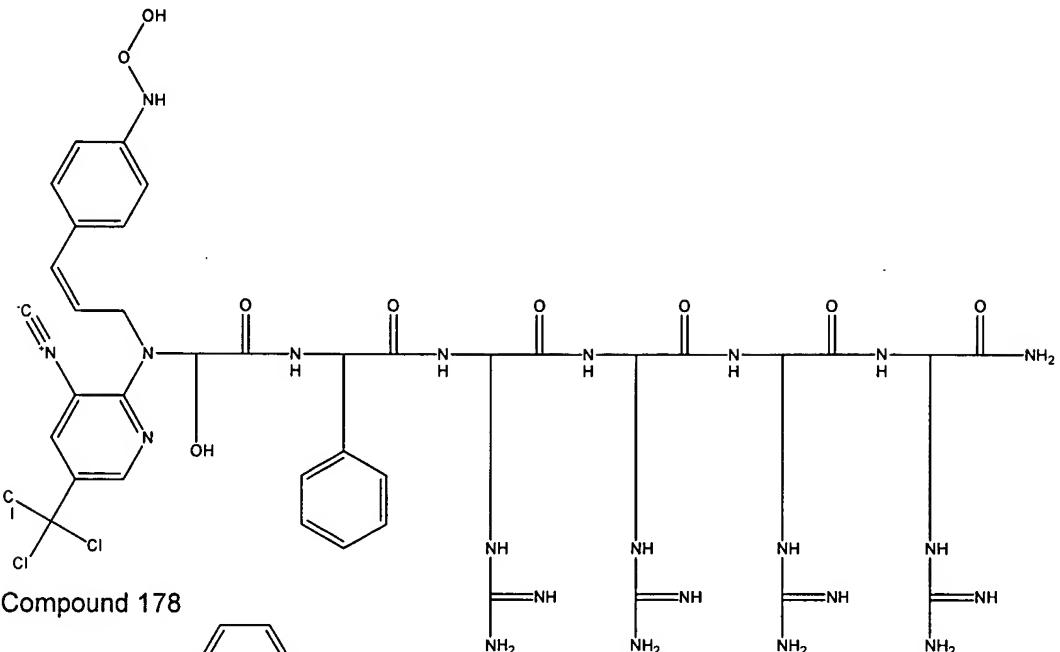


Compound 176

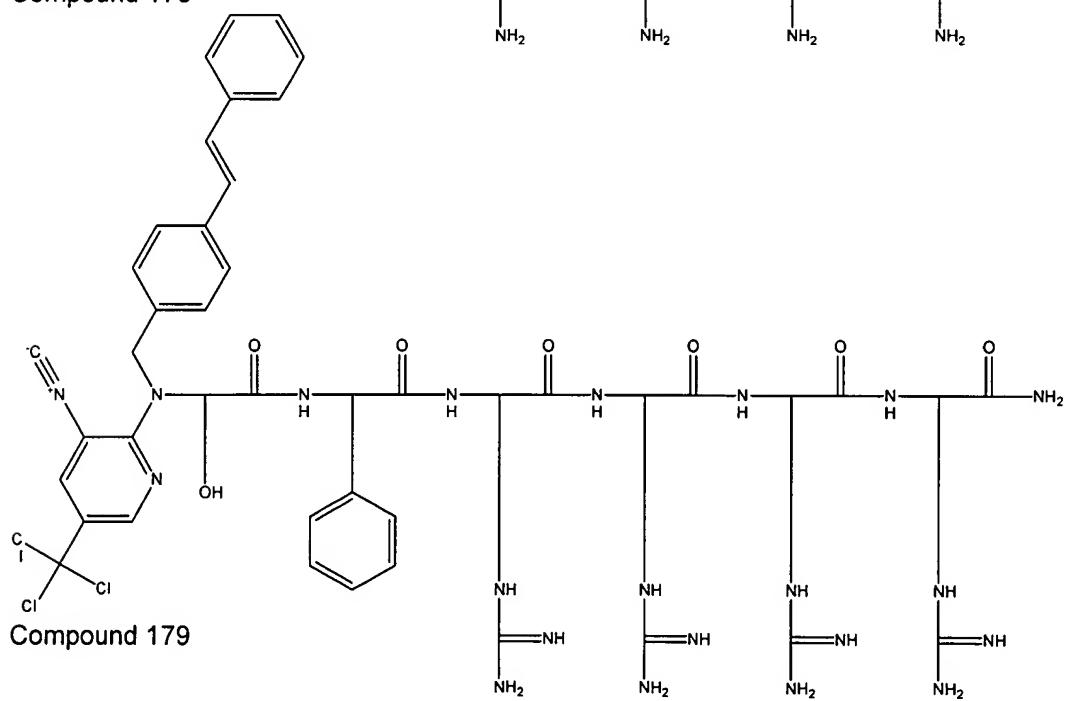


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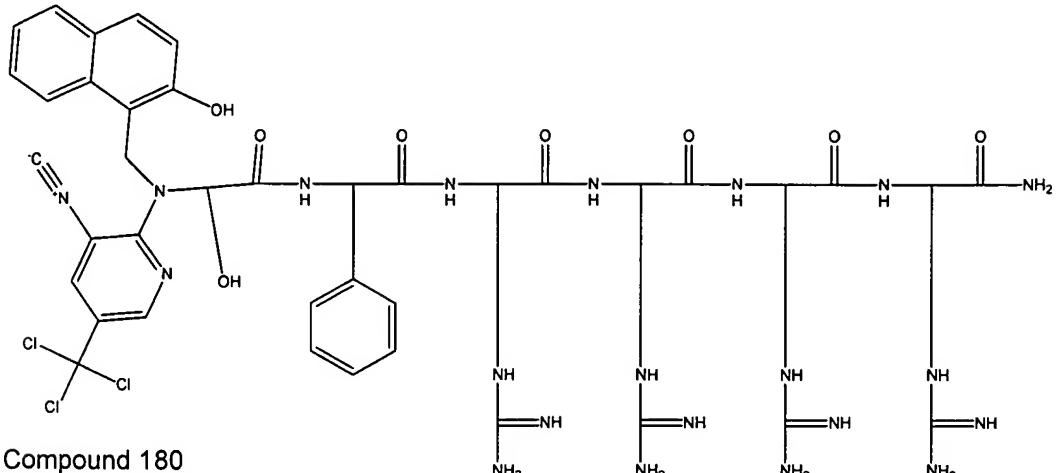


Compound 178

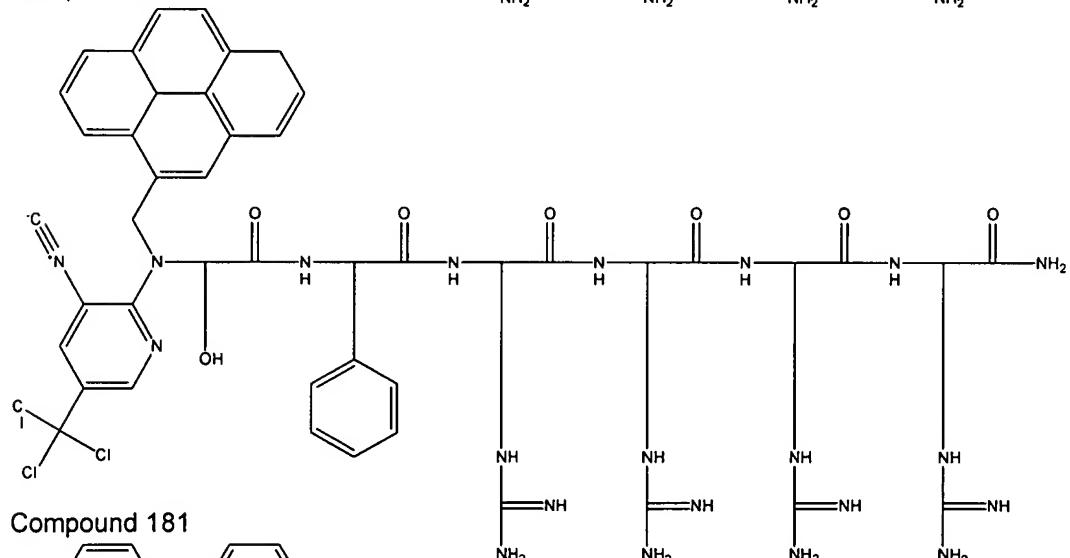


Compound 179

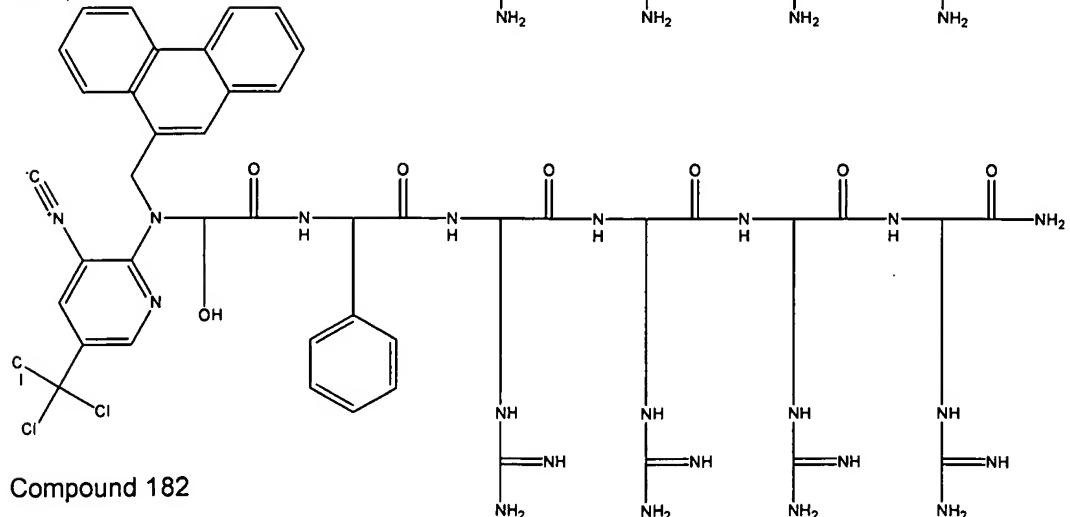
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Compound 180

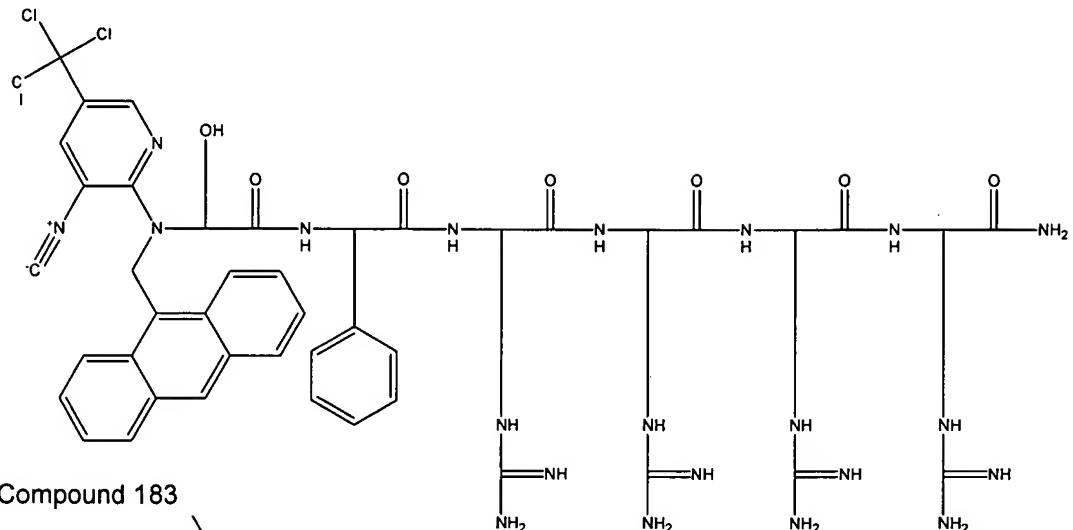


Compound 181

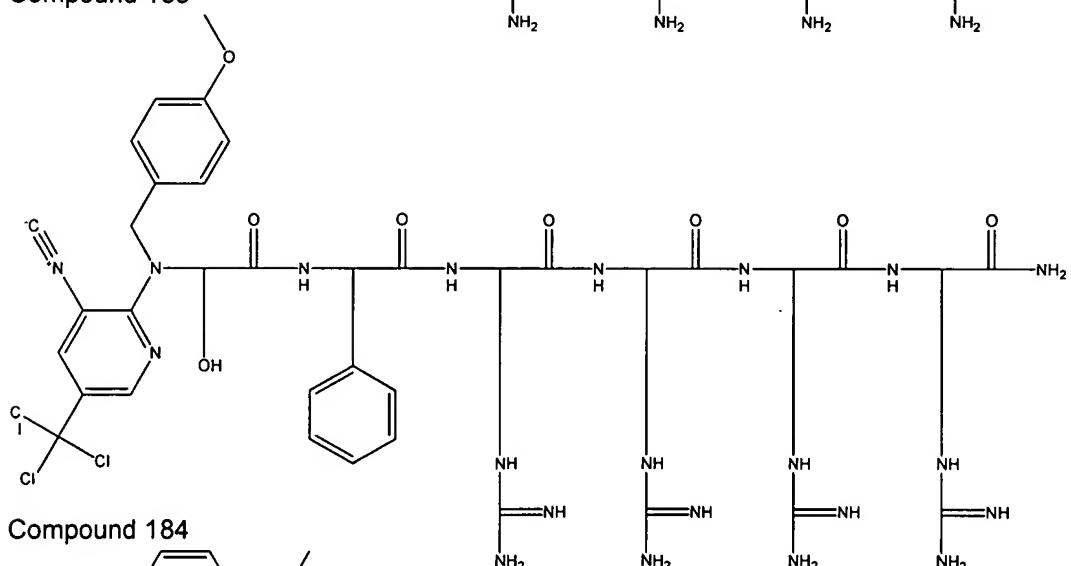


Compound 182

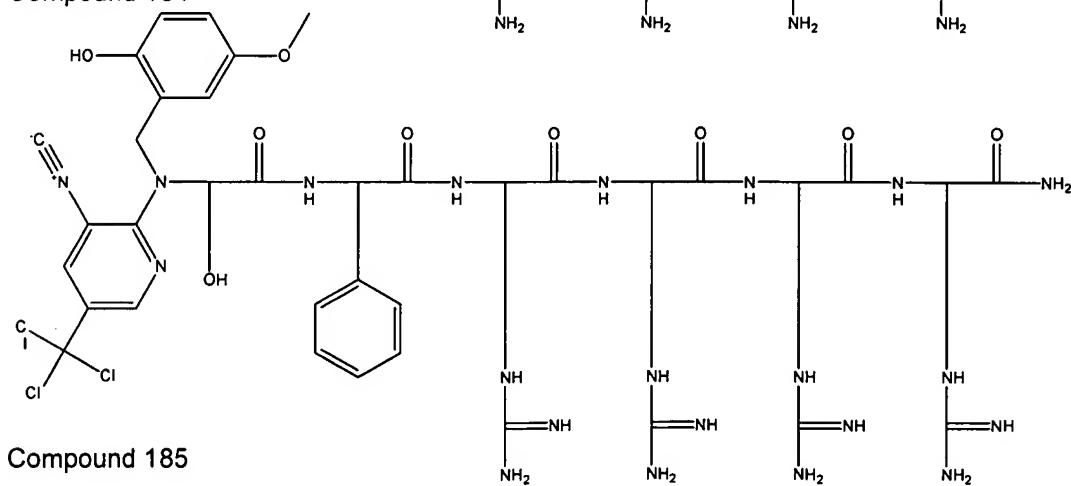
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Compound 183

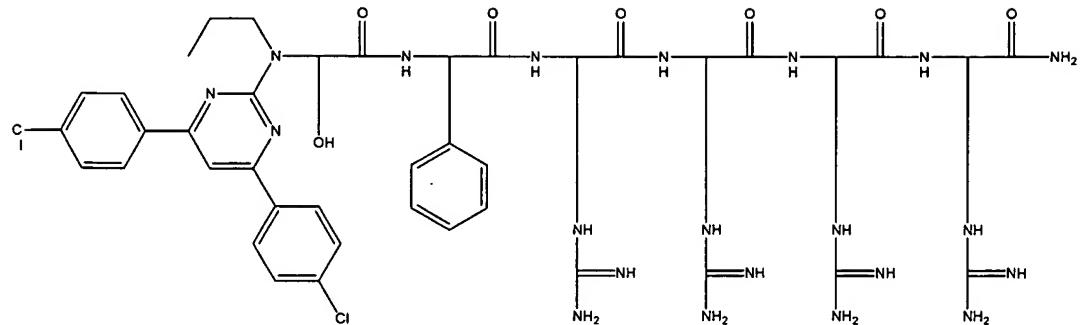


Compound 184

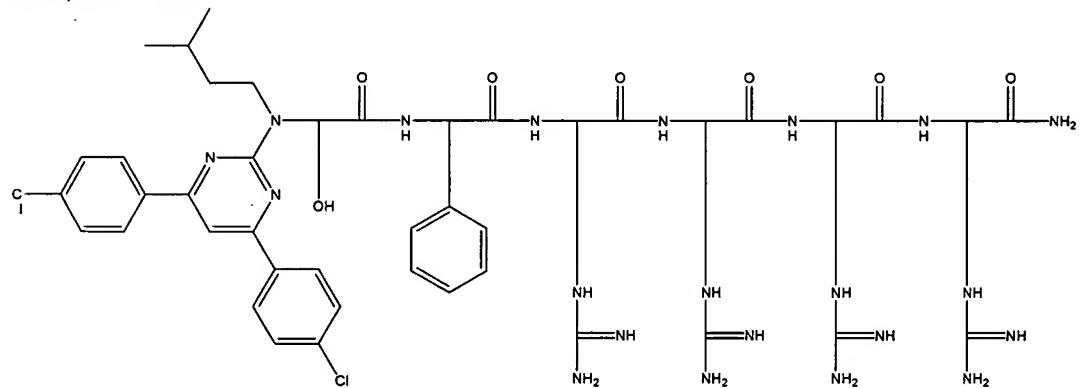


Compound 185

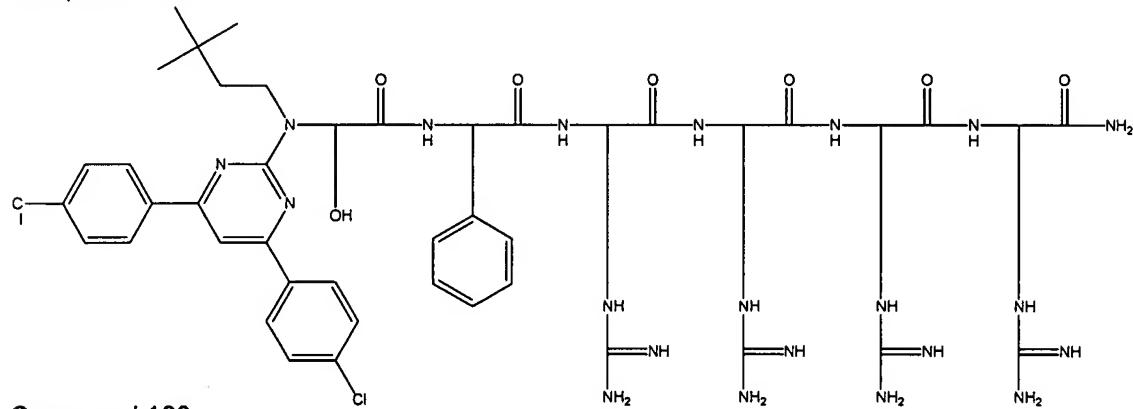
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Compound 186

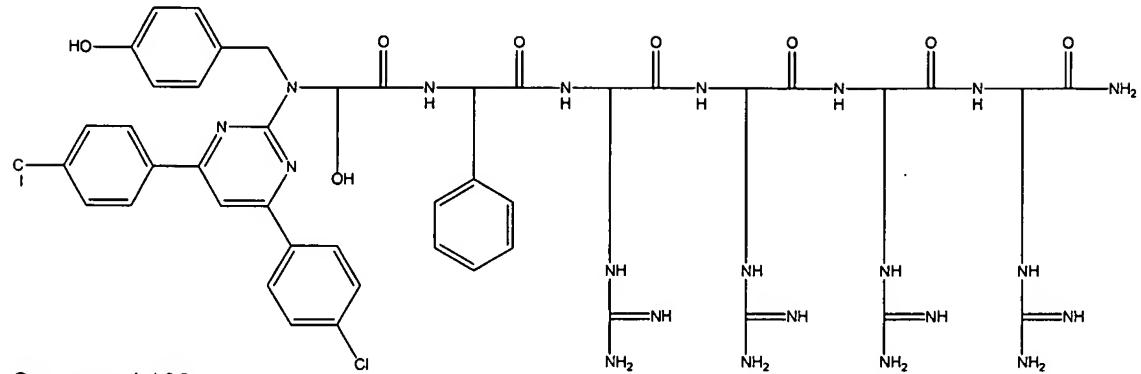


Compound 187

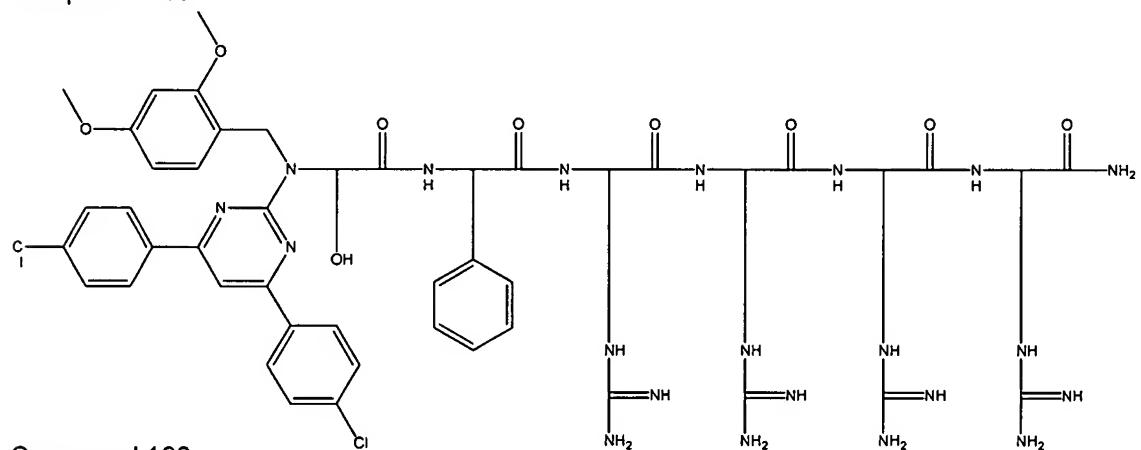


Compound 188

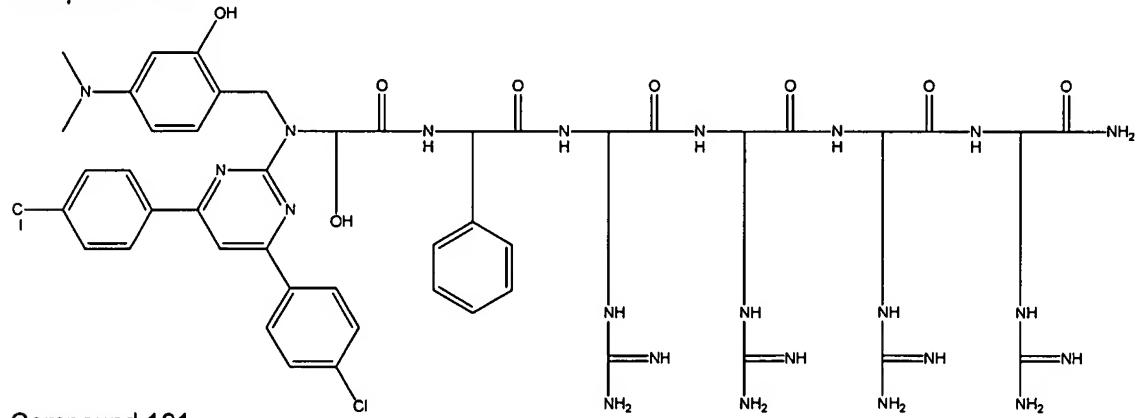
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Compound 189

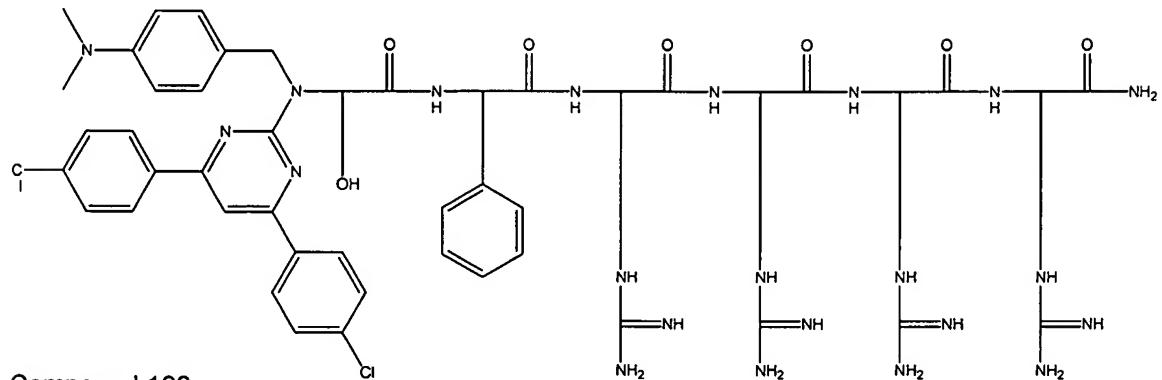


Compound 190

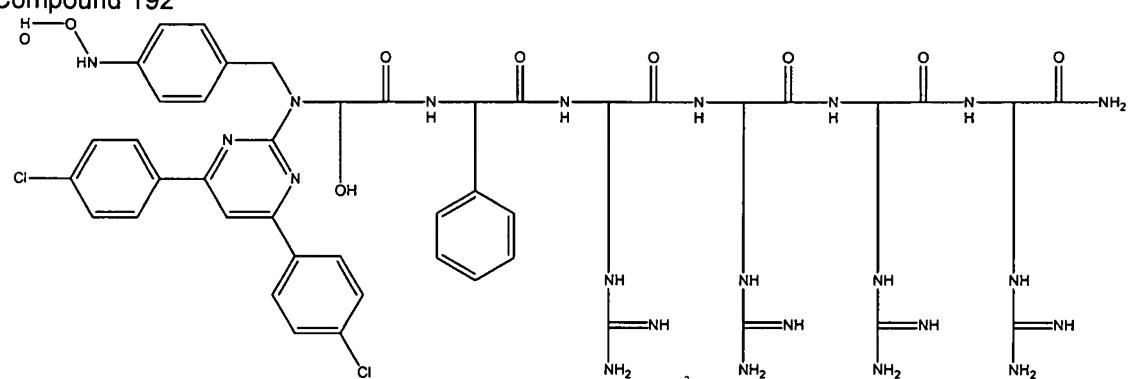


Compound 191

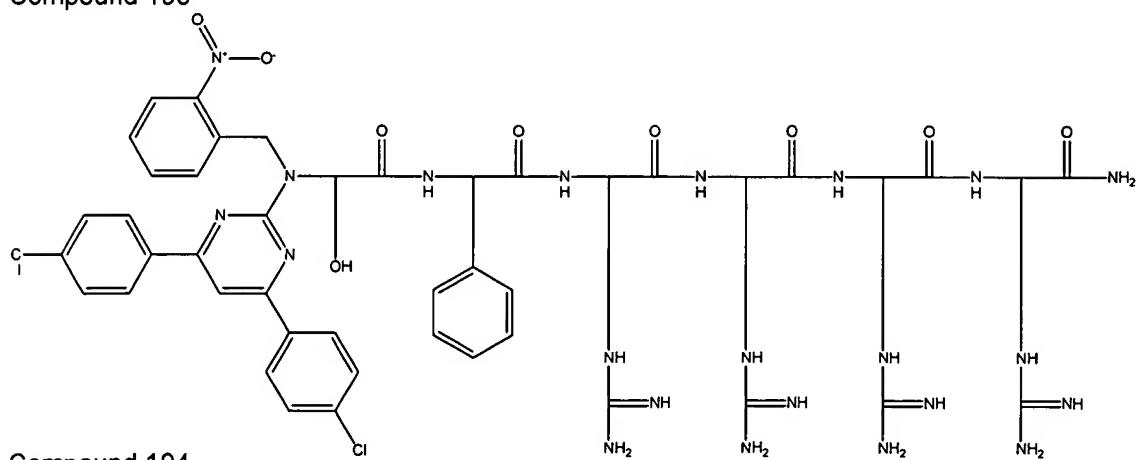
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Compound 192

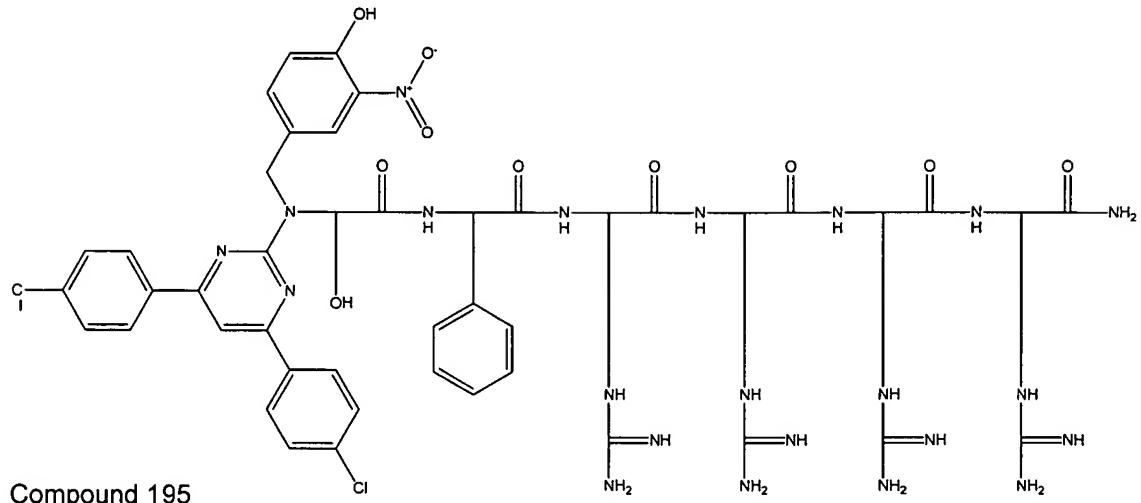


Compound 193

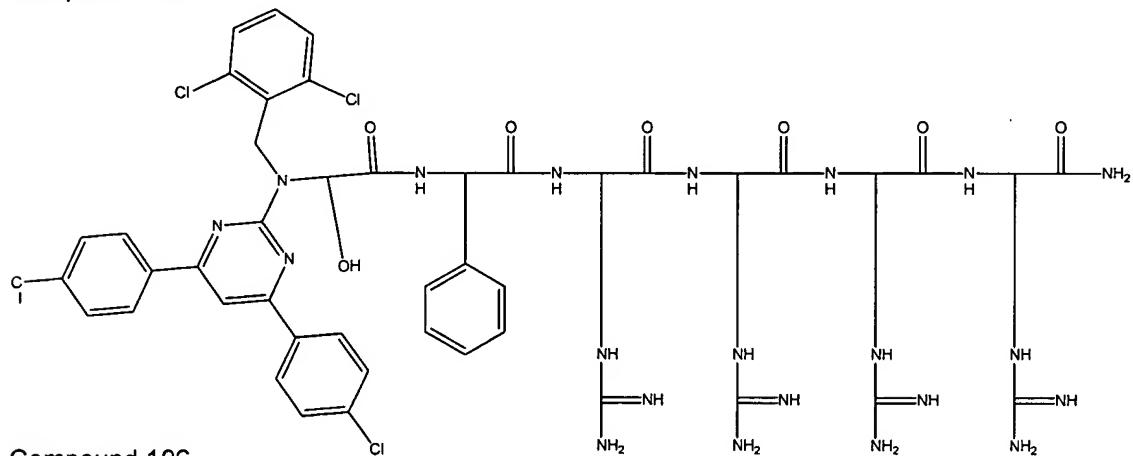


Compound 194

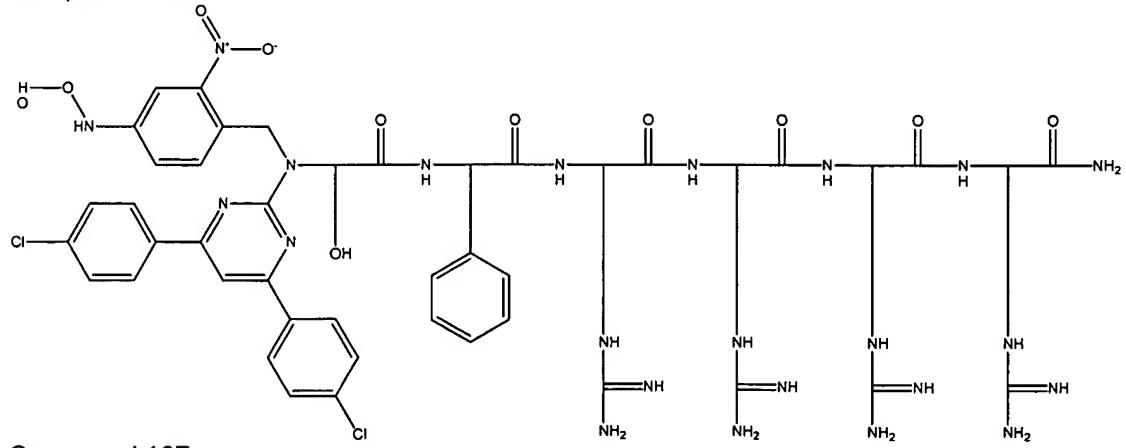
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Compound 195

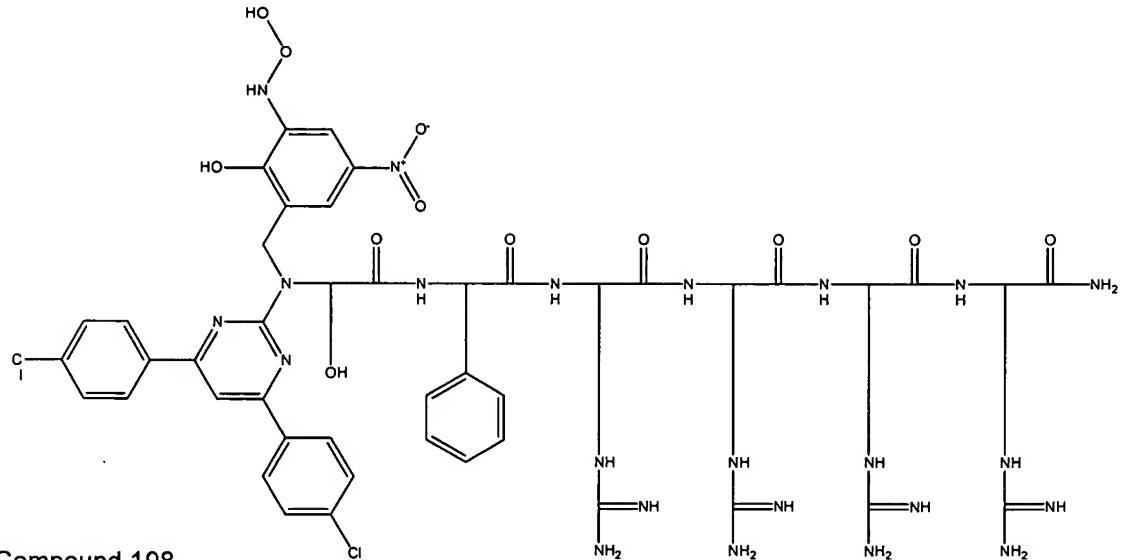


Compound 196

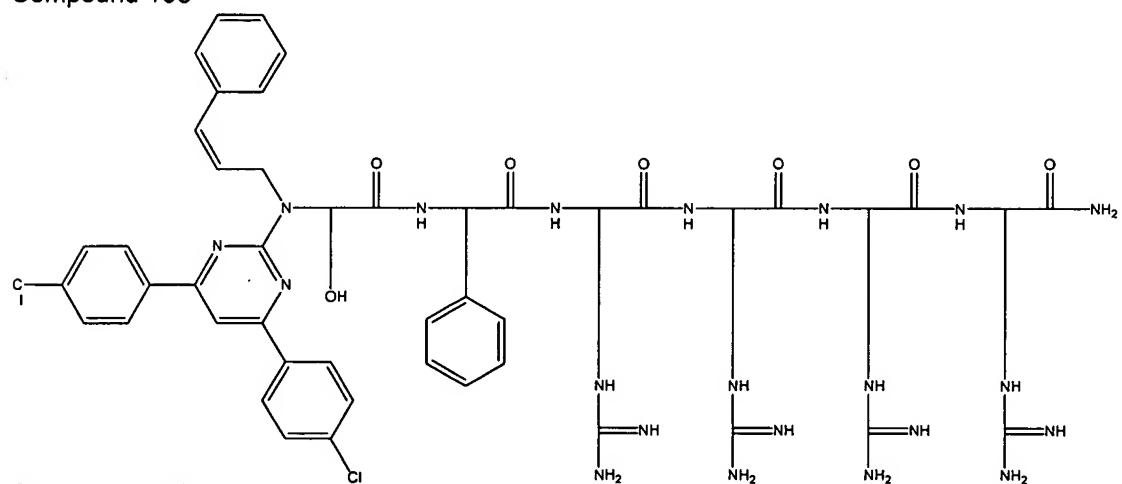


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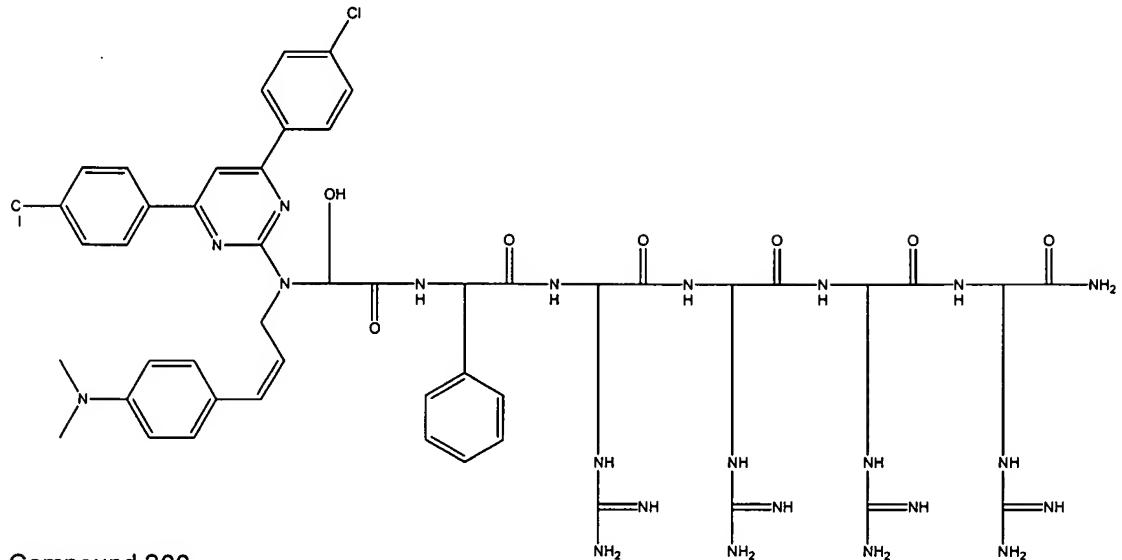


Compound 198

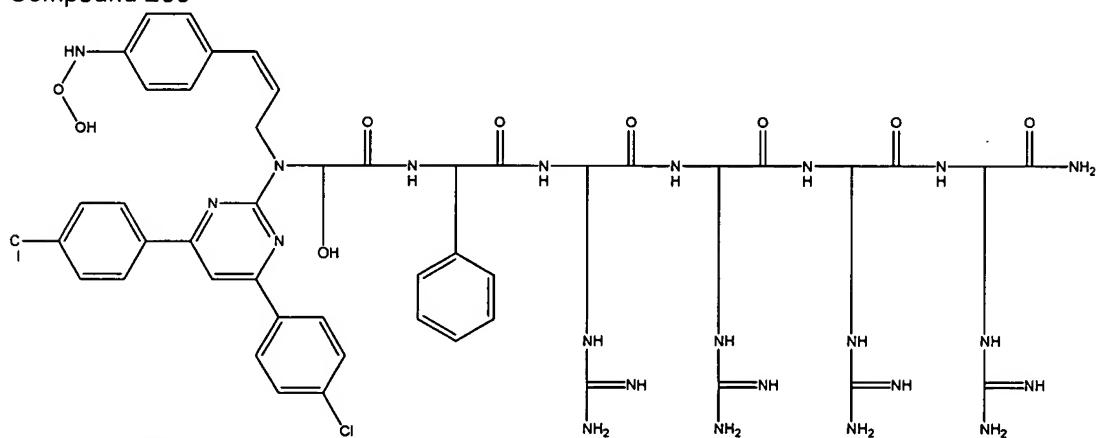


Compound 199

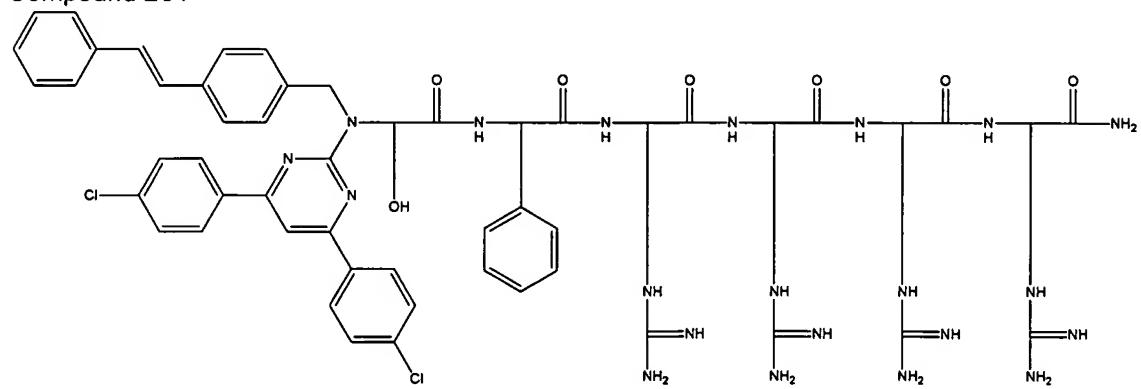
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Compound 200

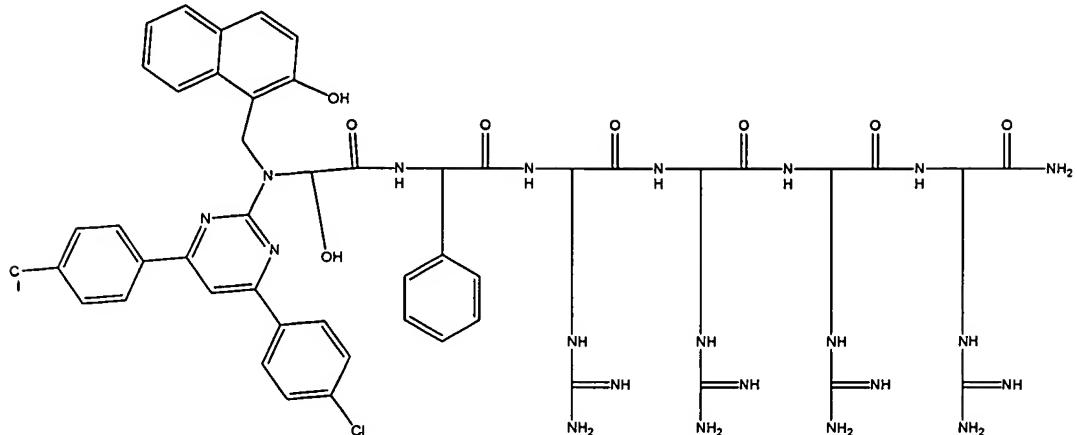


Compound 201

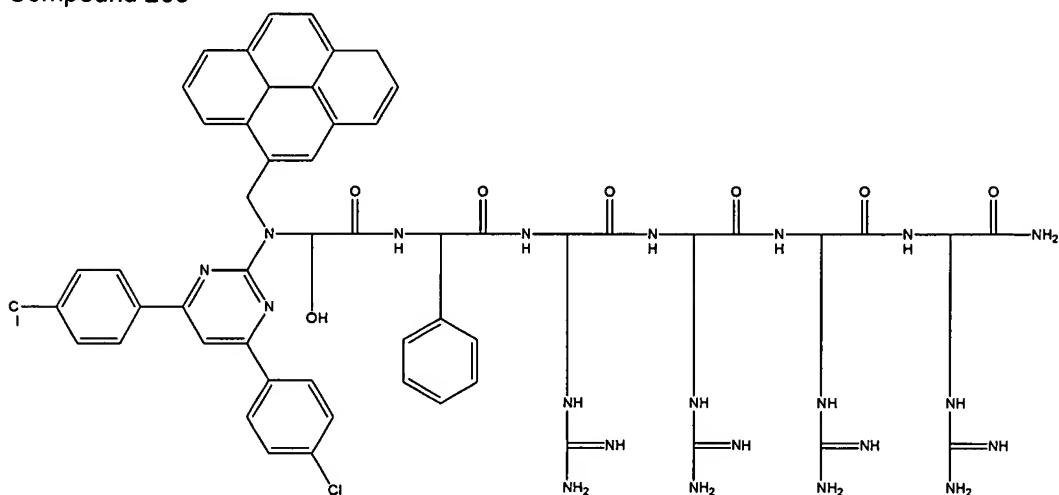


Compound 202

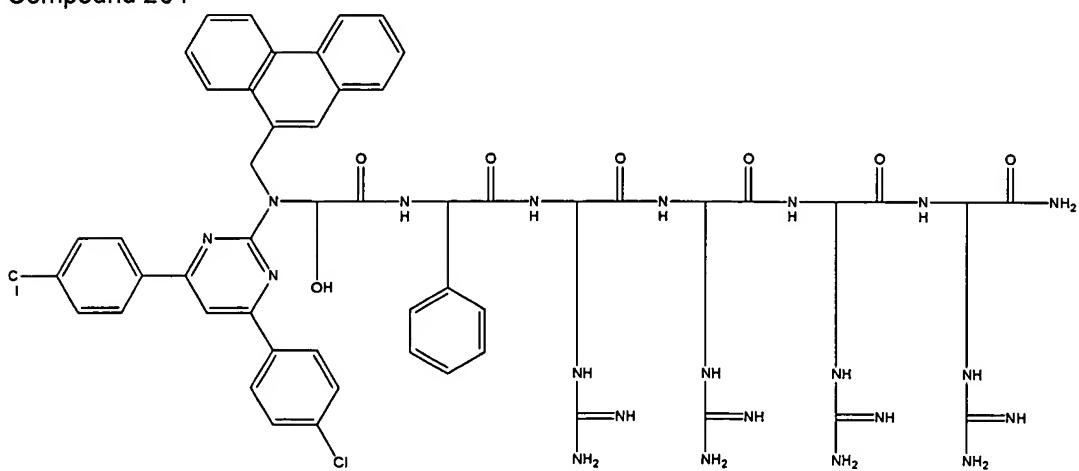
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Compound 203

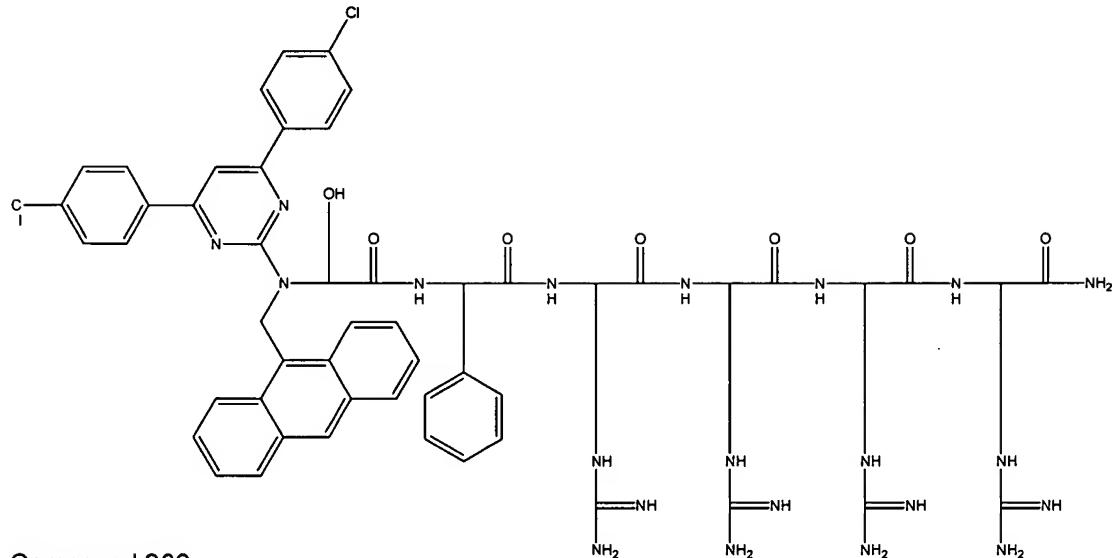


Compound 204

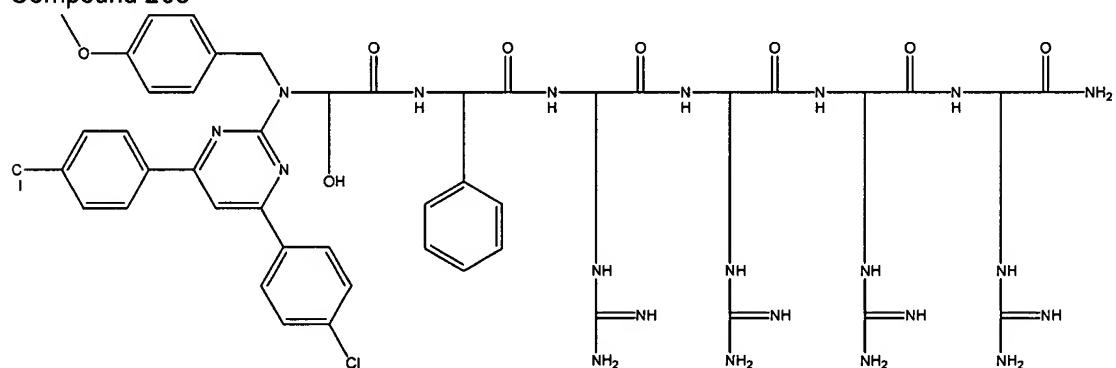


Compound 205

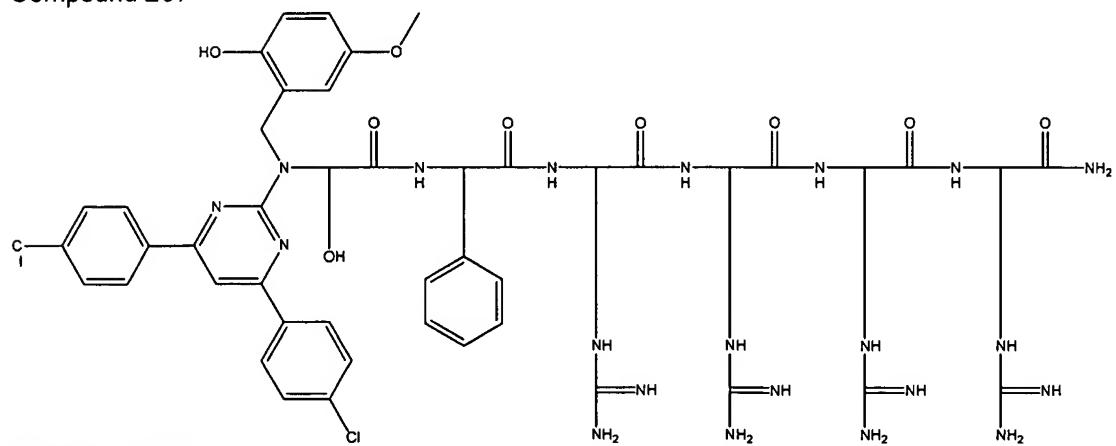
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Compound 206

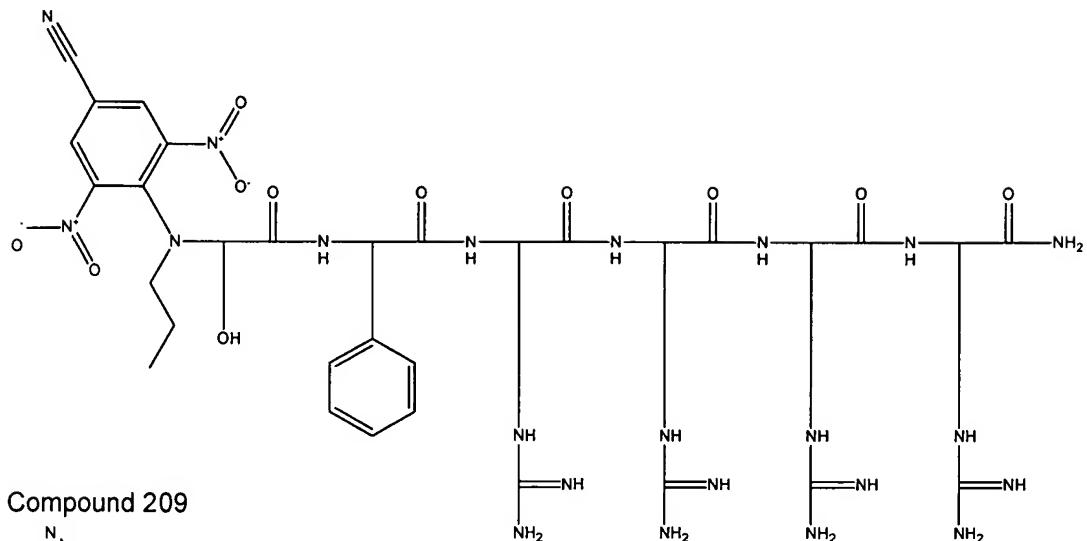


Compound 207

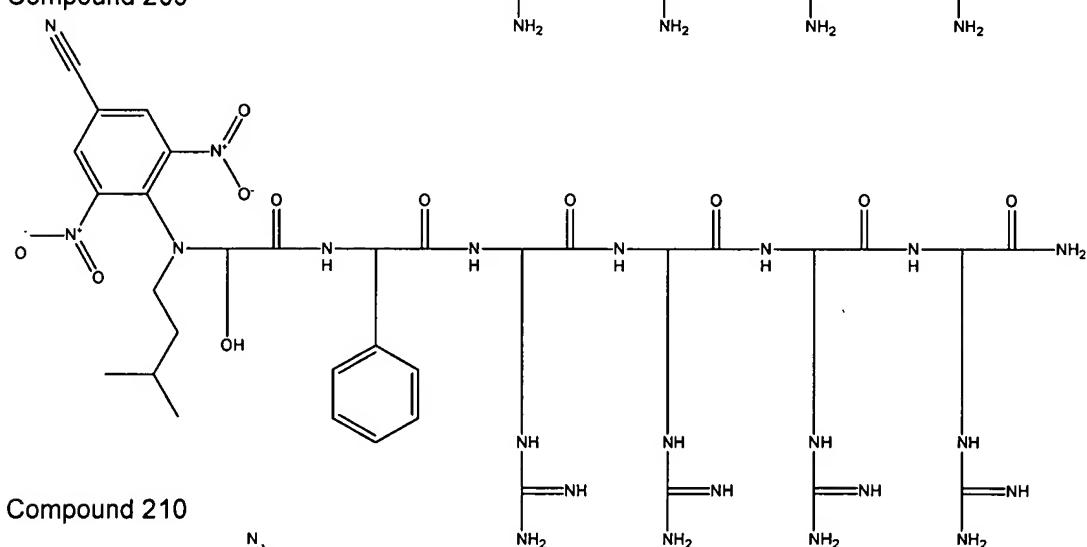


Compound 208

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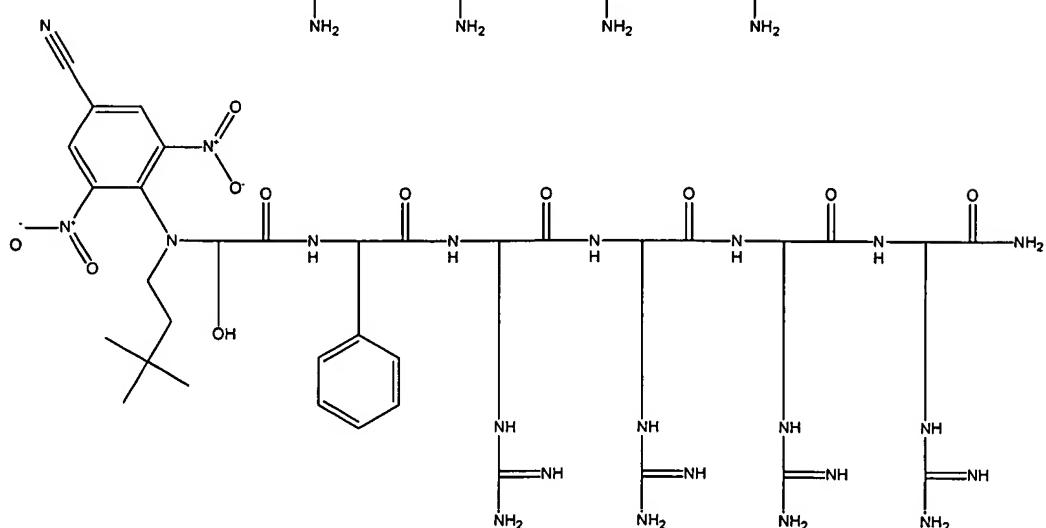


Compound 209

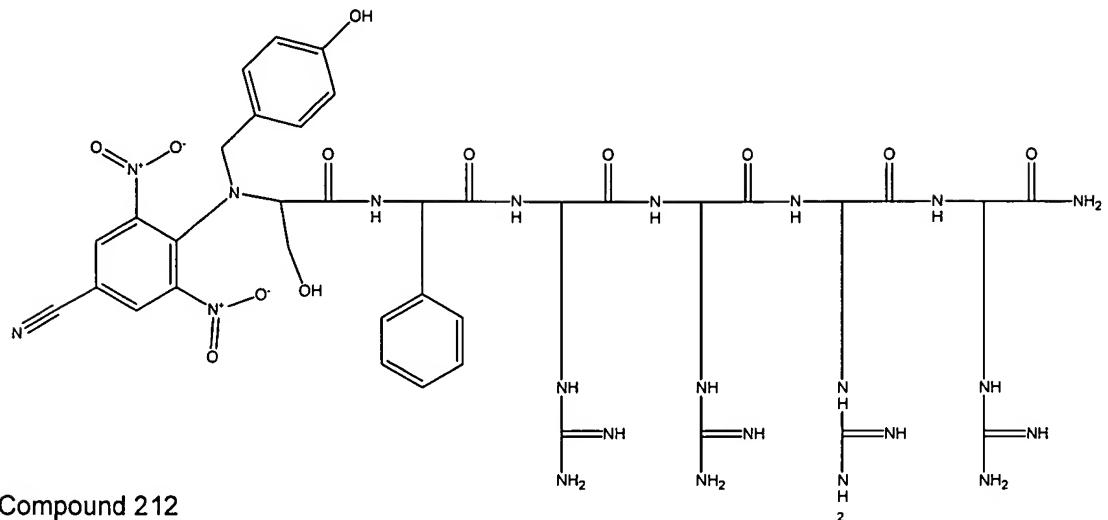


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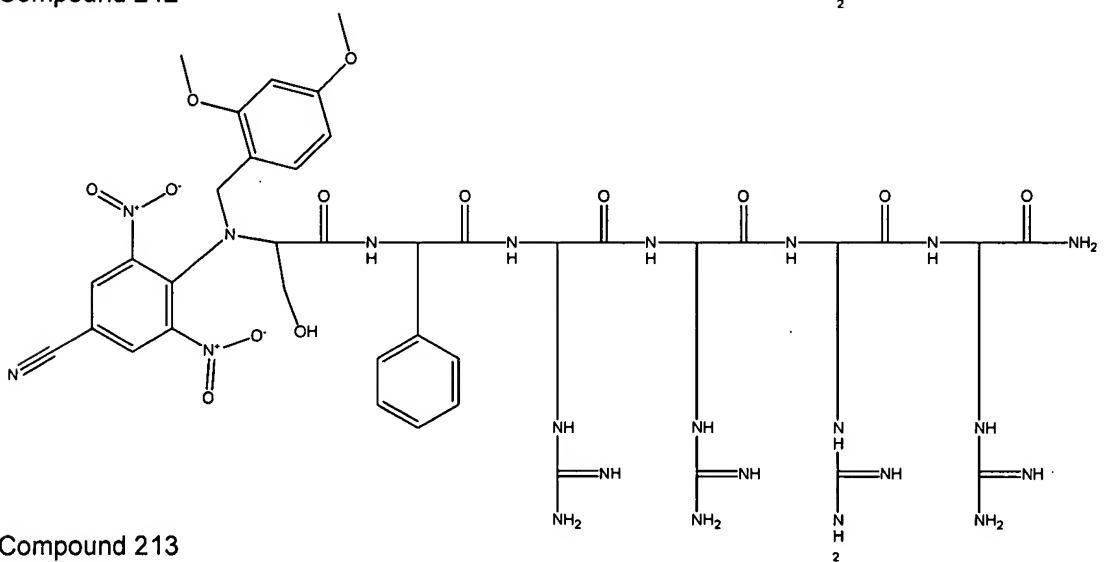
Compound 211



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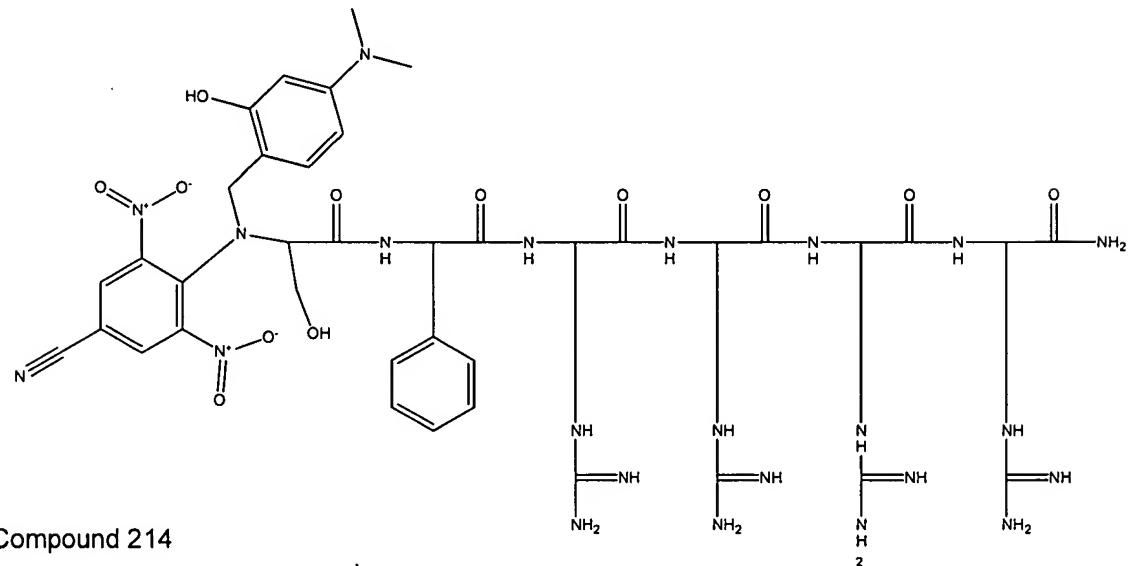


Compound 212

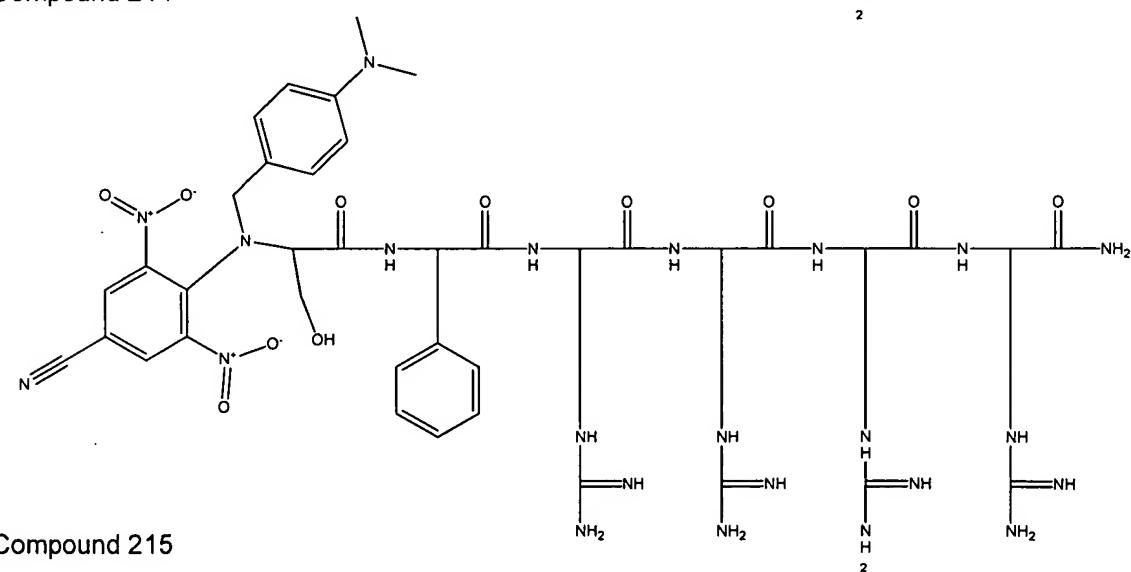


Compound 213

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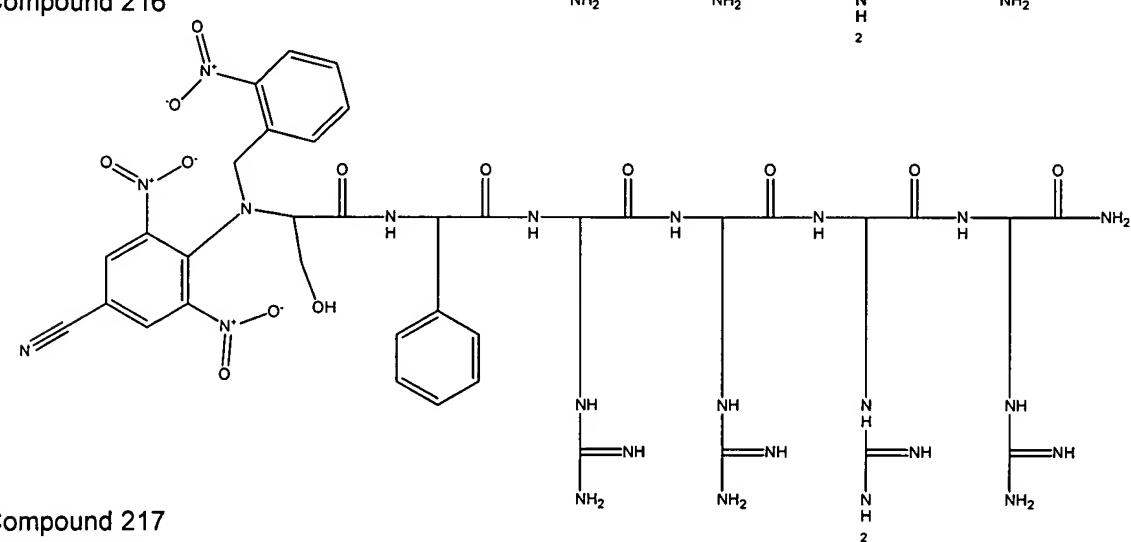
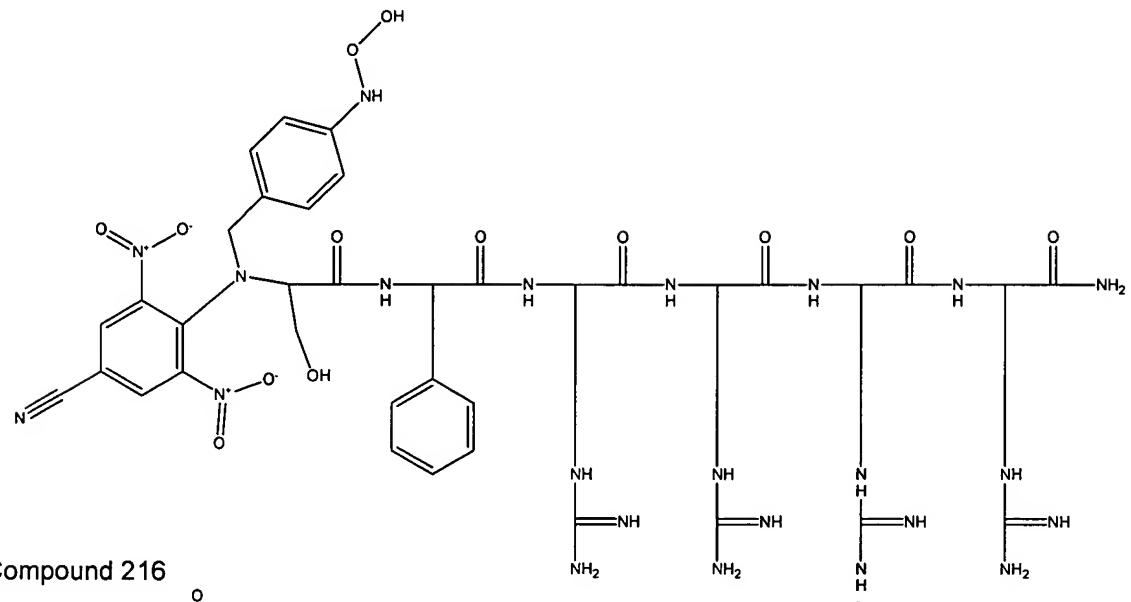


Compound 214

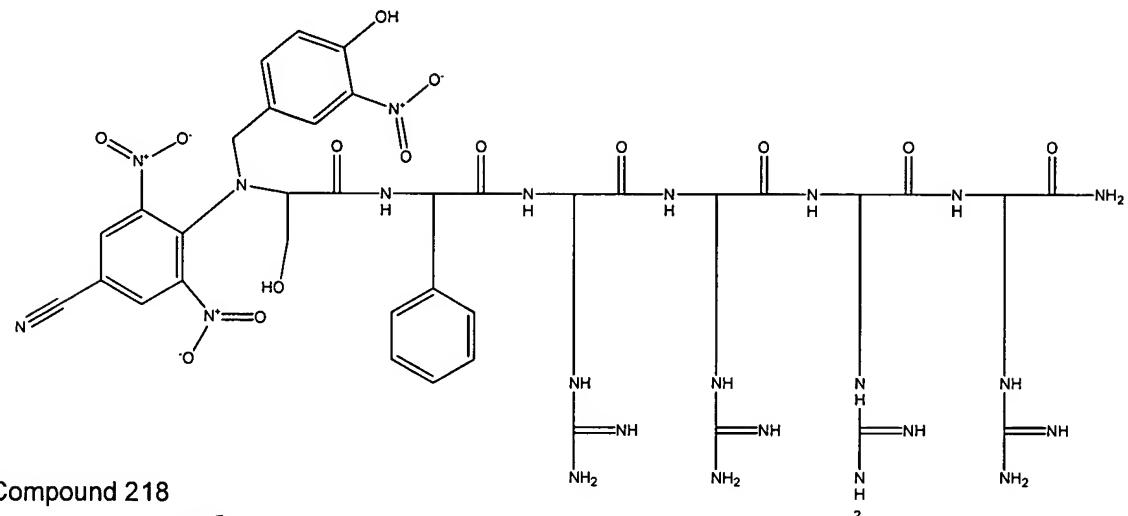


Compound 215

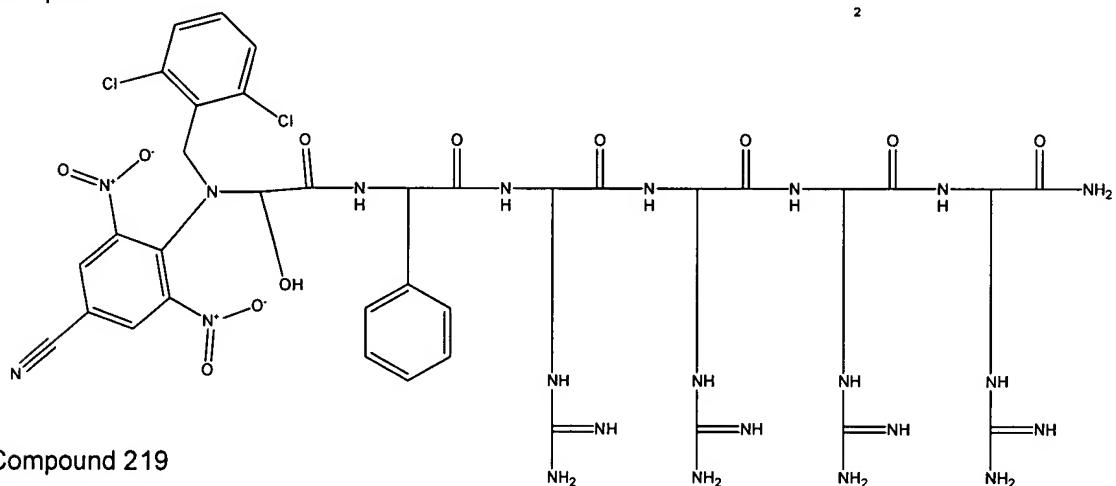
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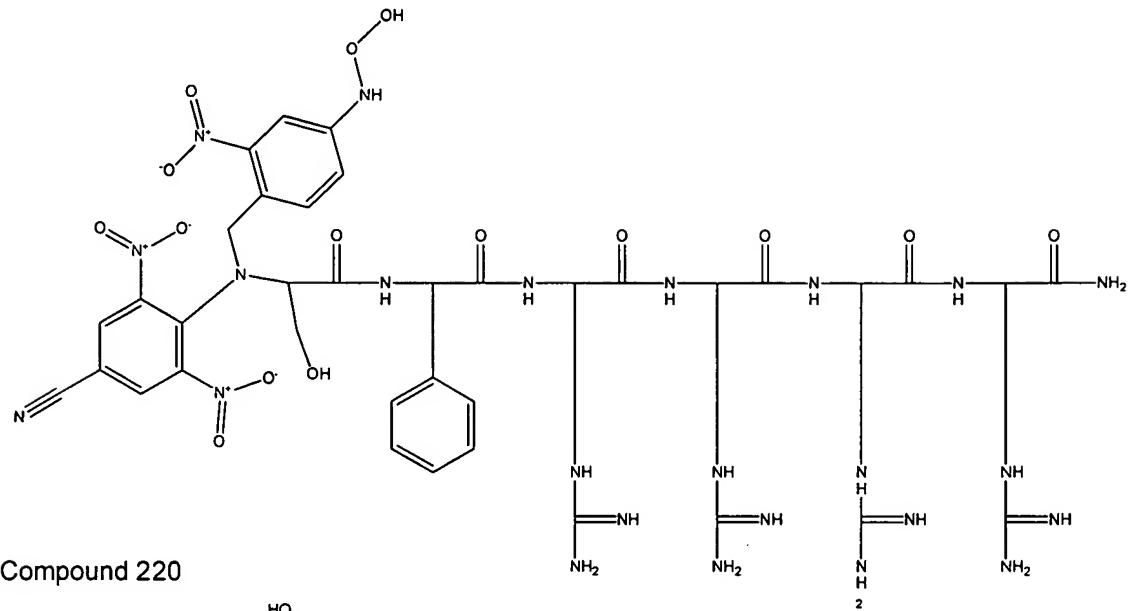


Compound 218

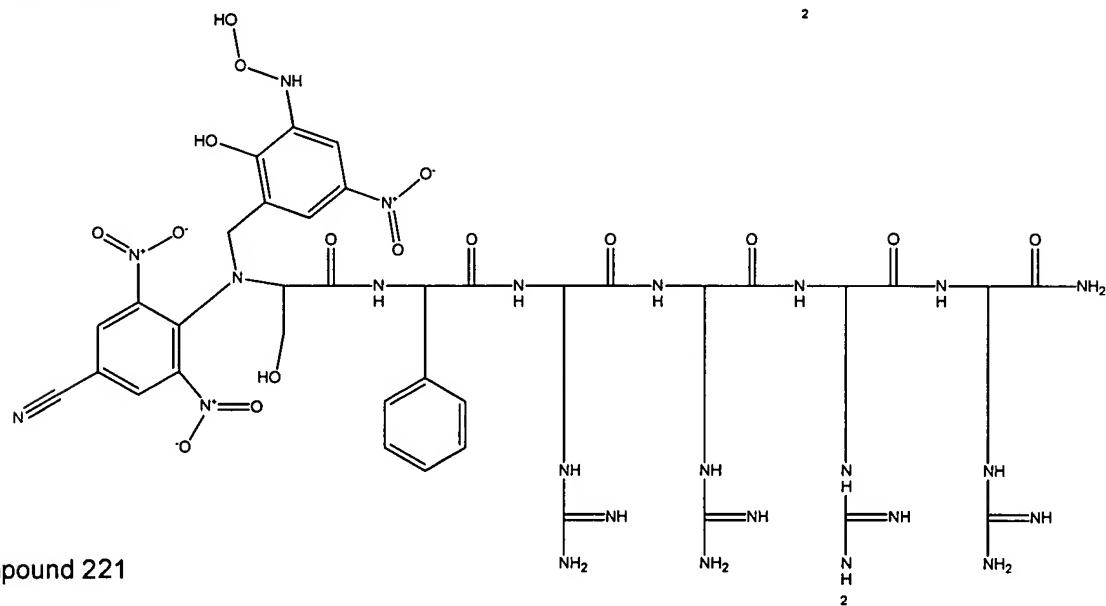


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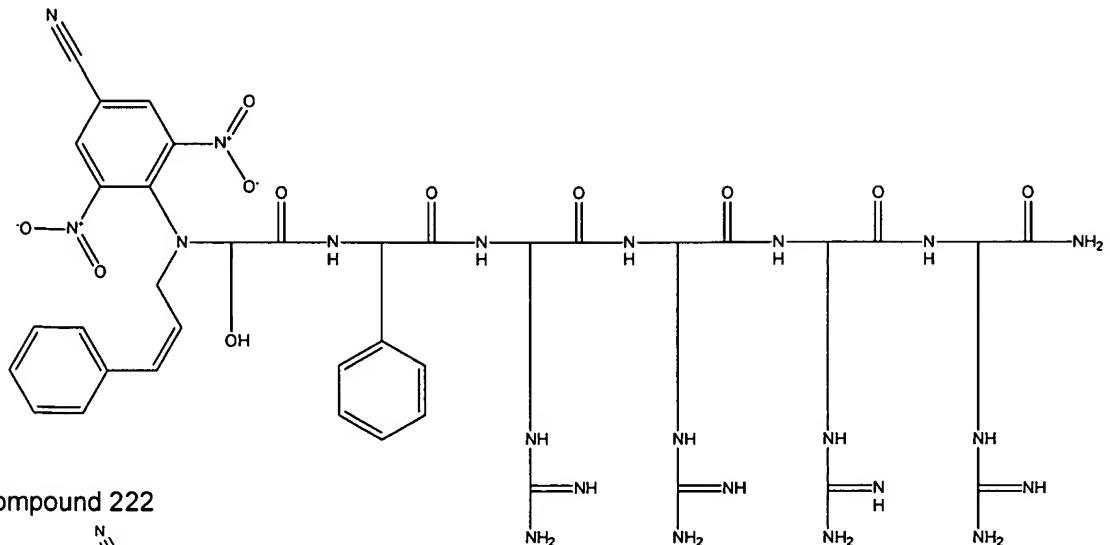


Compound 220

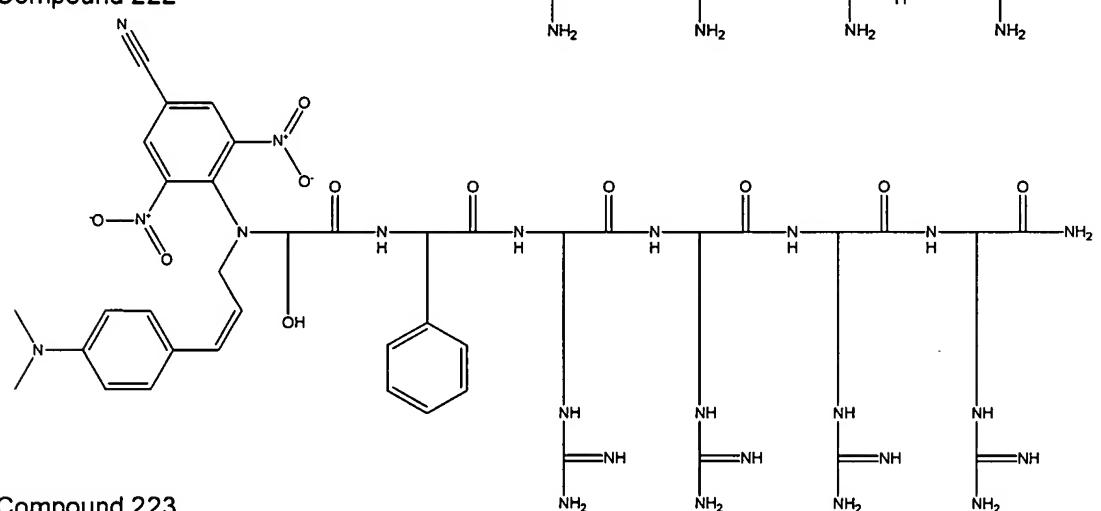


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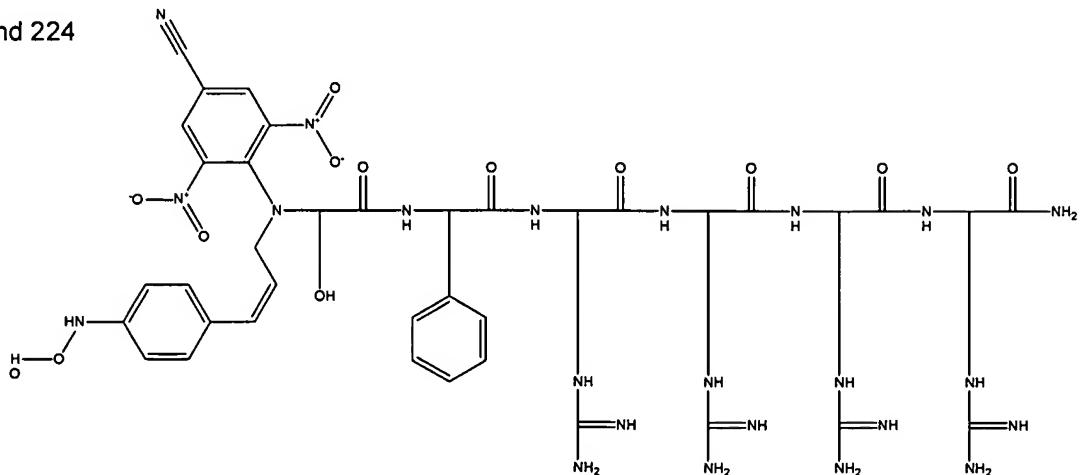


Compound 222

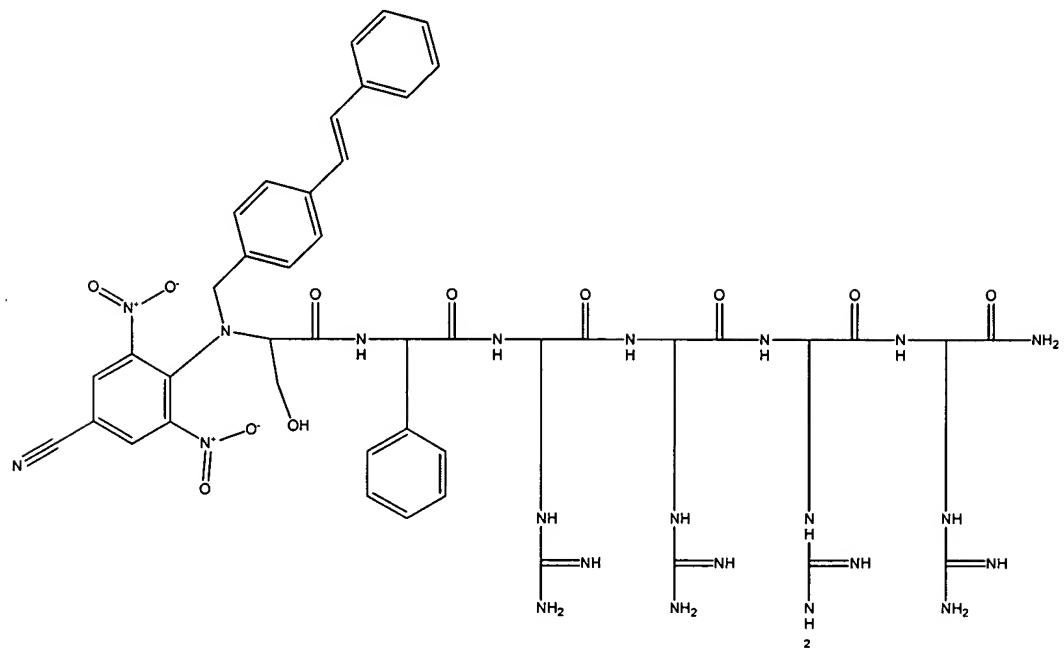


Compound 223

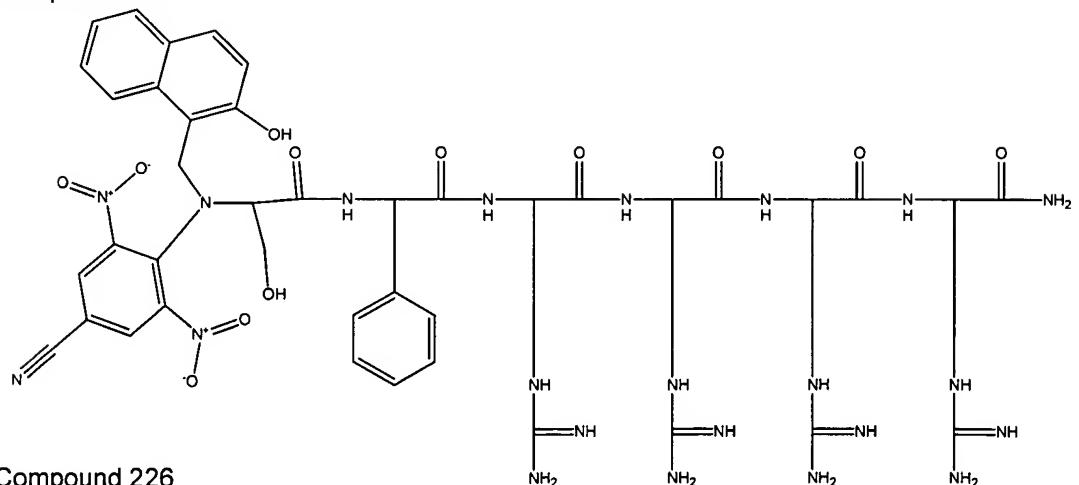
Compound 224



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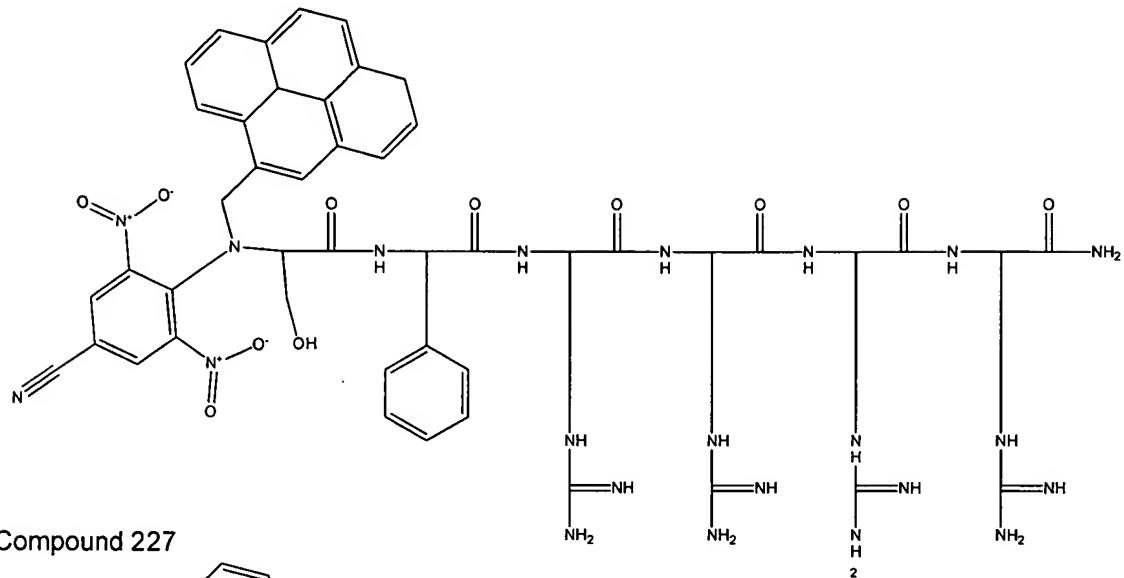


Compound 225

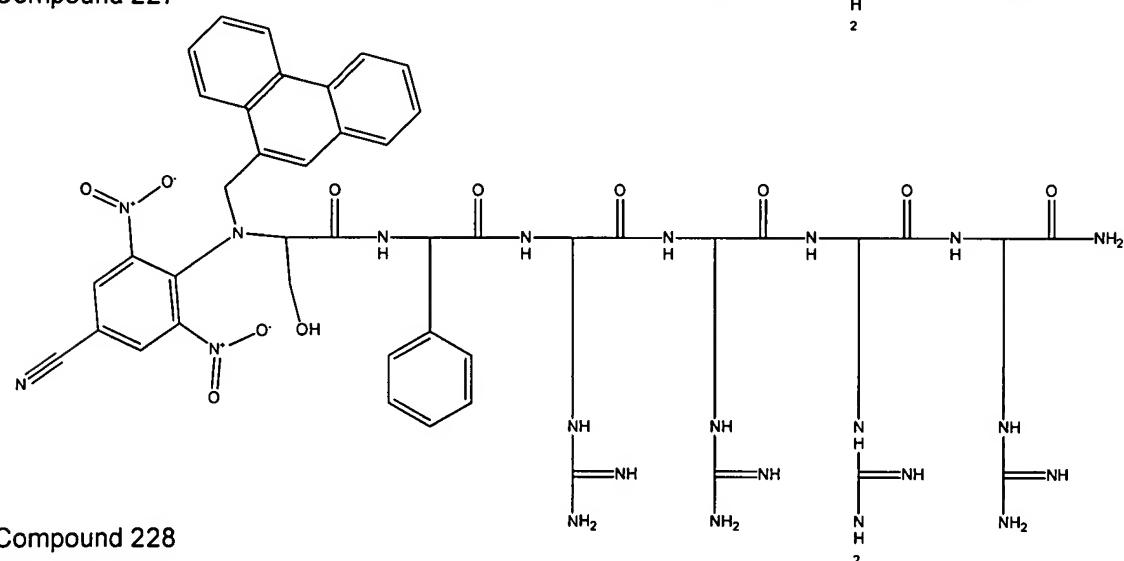


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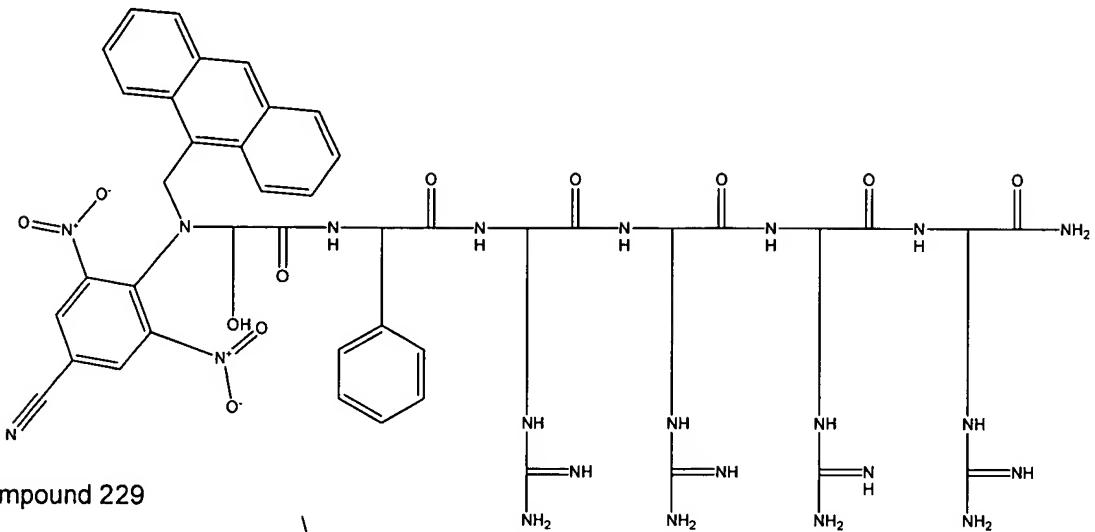


Compound 227

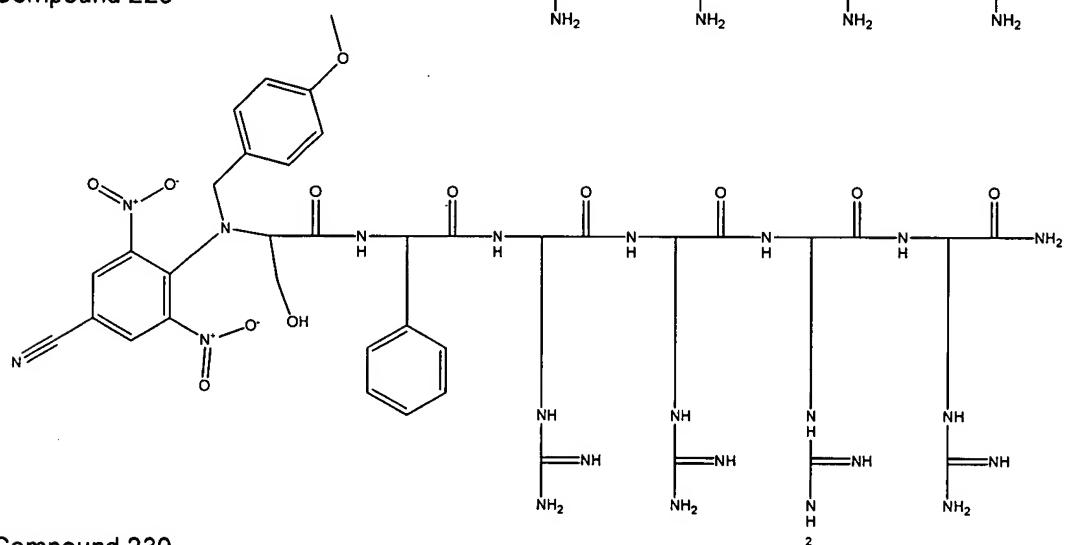


Compound 228

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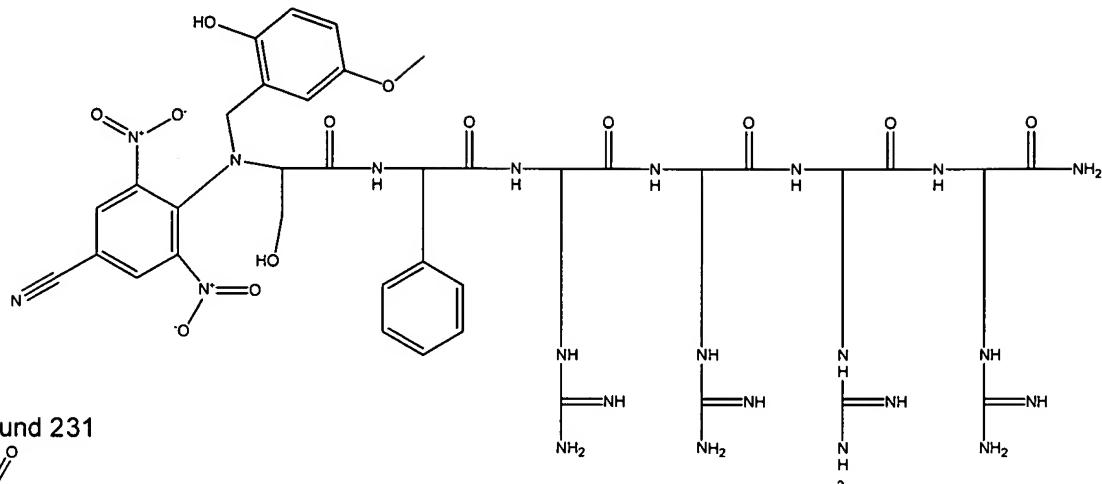


Compound 229

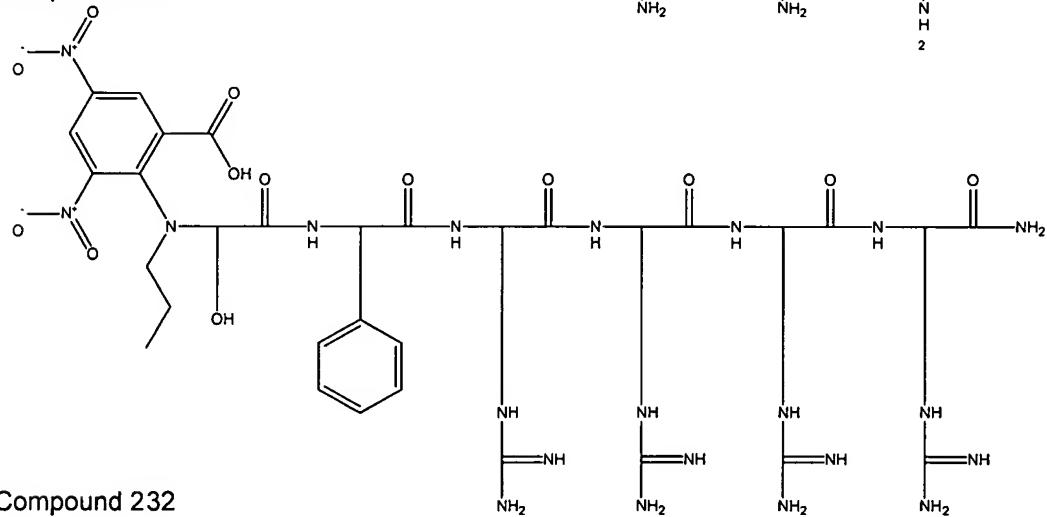


Compound 230

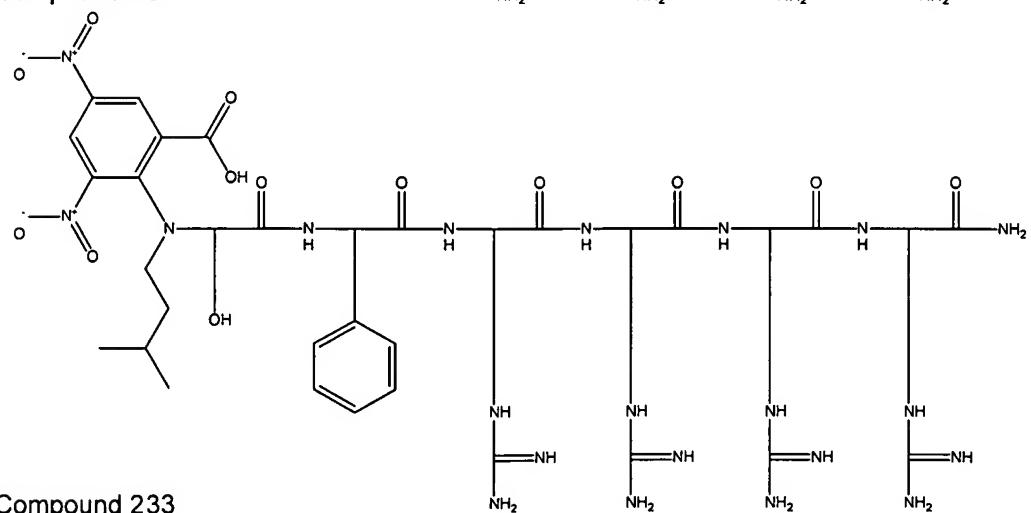
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Compound 231

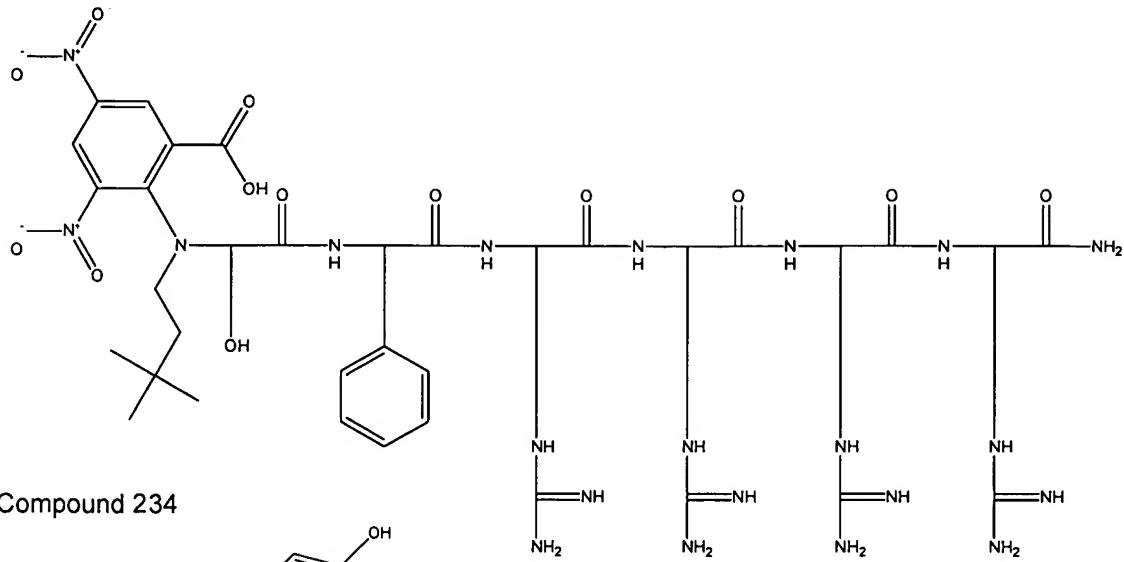


Compound 232

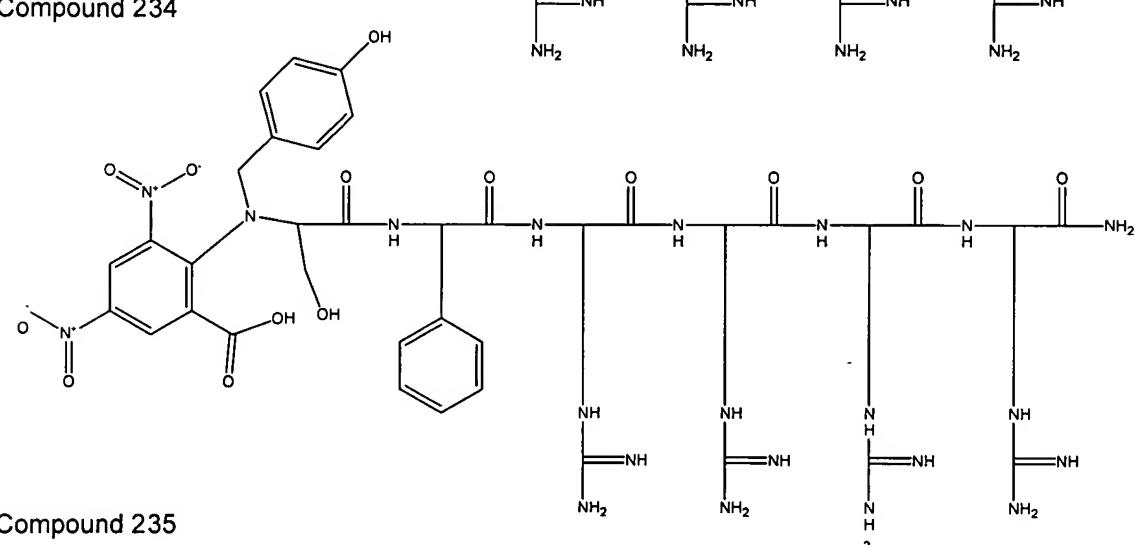


Compound 233

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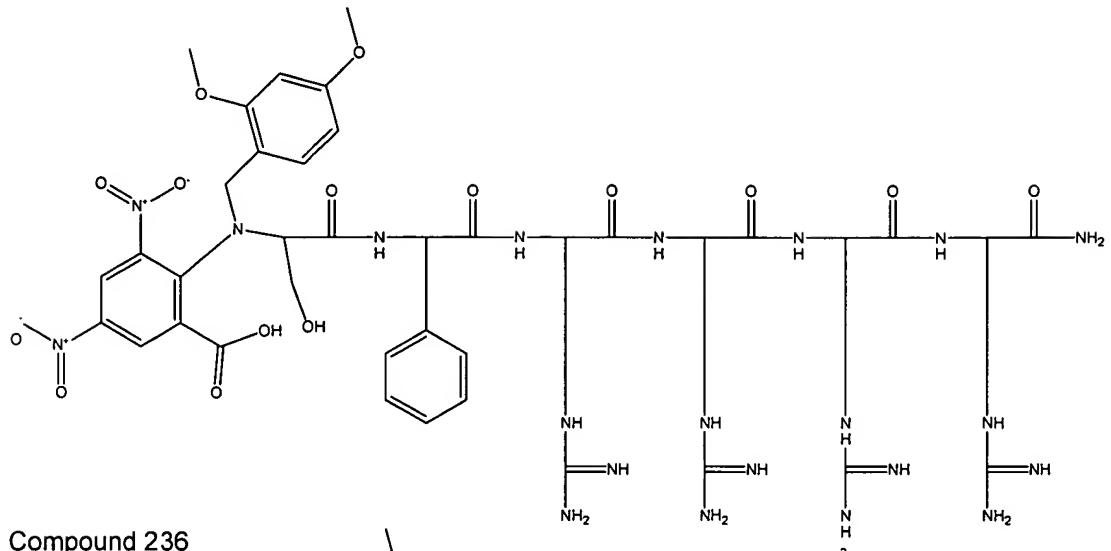


Compound 234

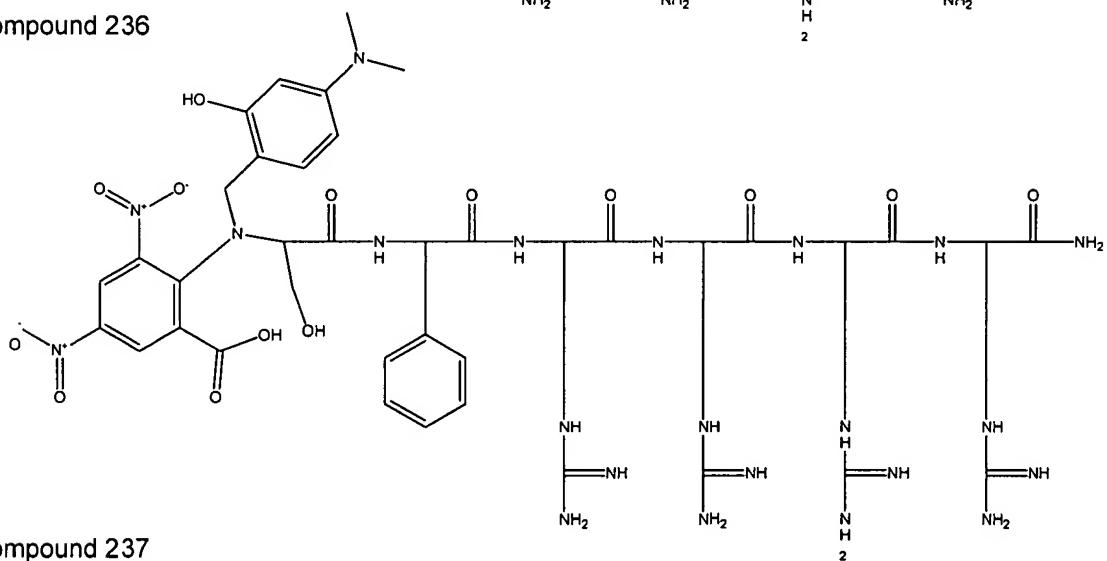


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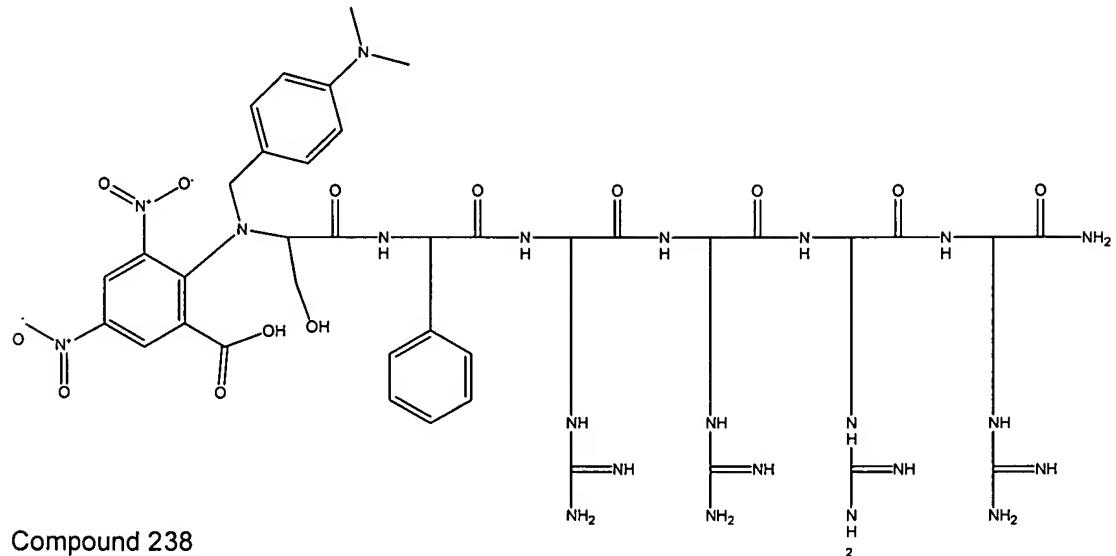


Compound 236

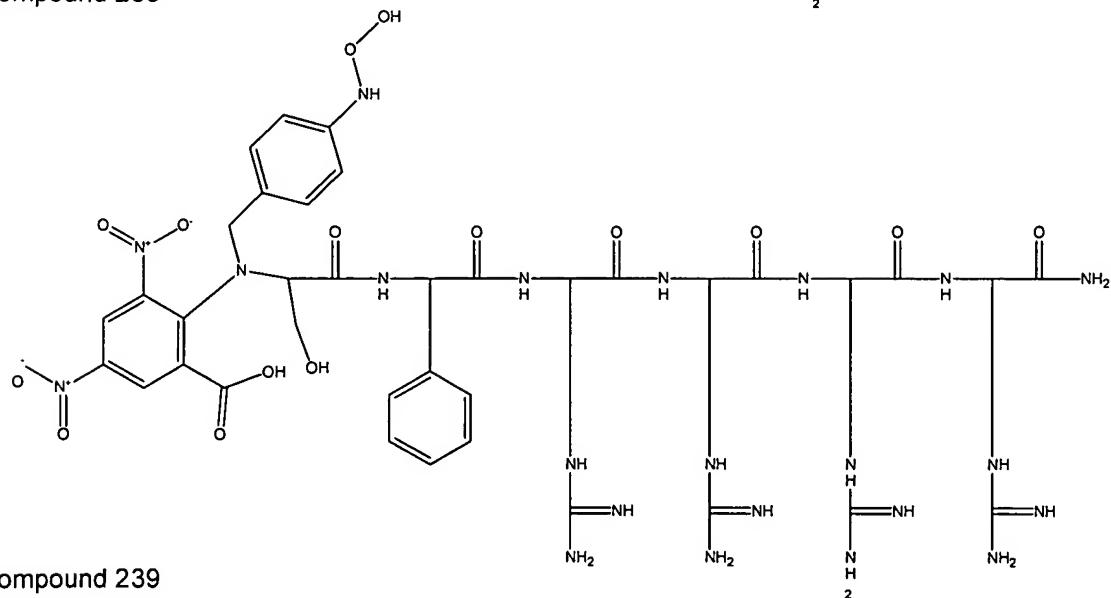


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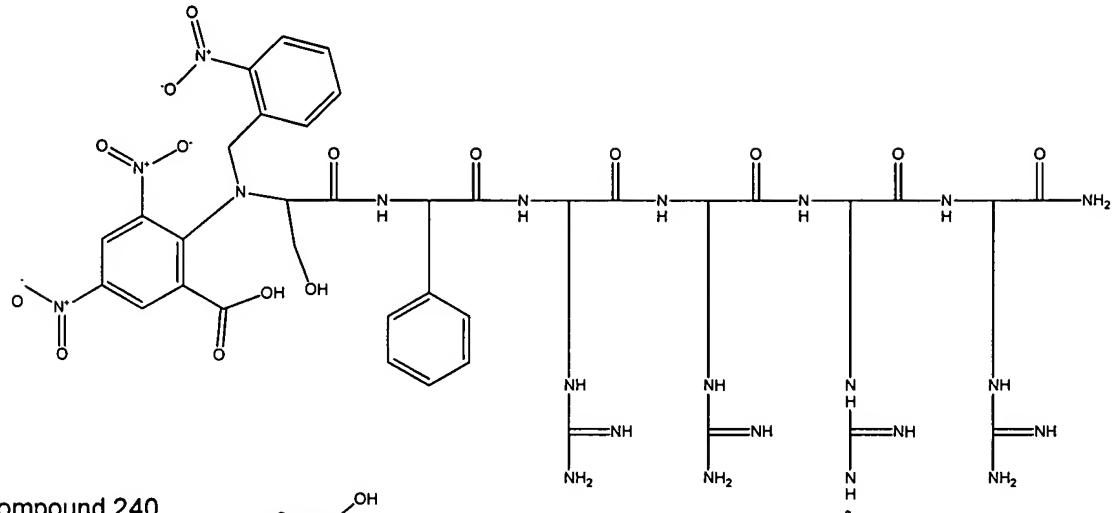


Compound 238

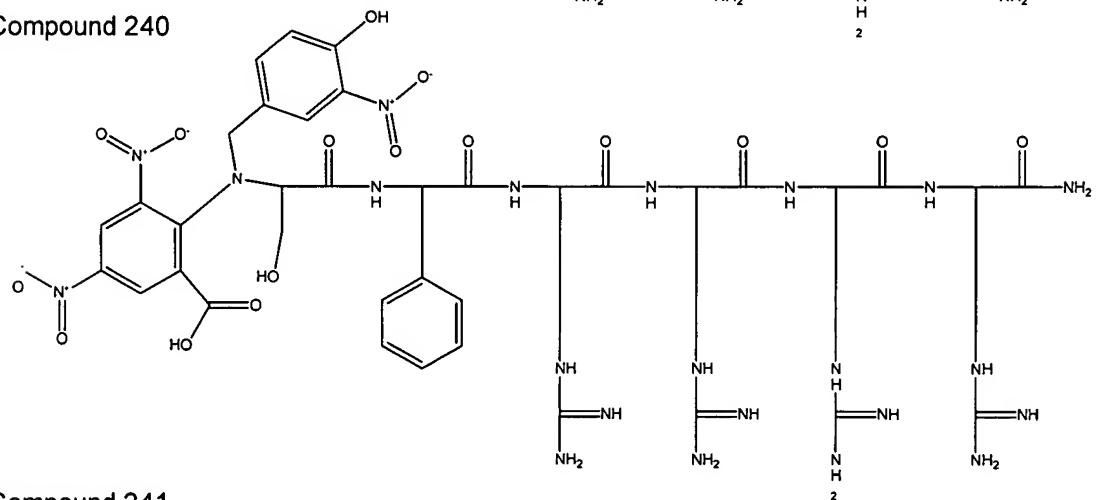


Compound 239

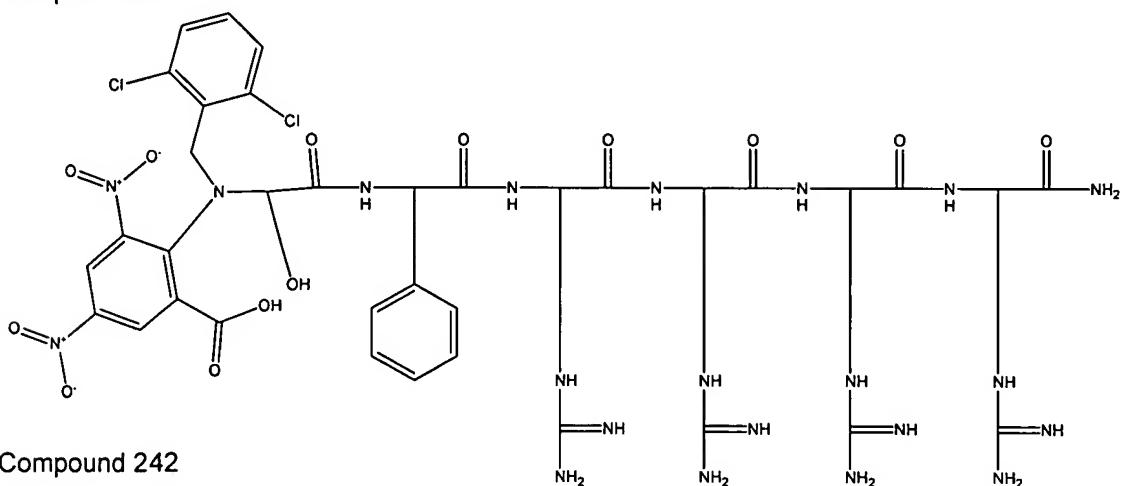
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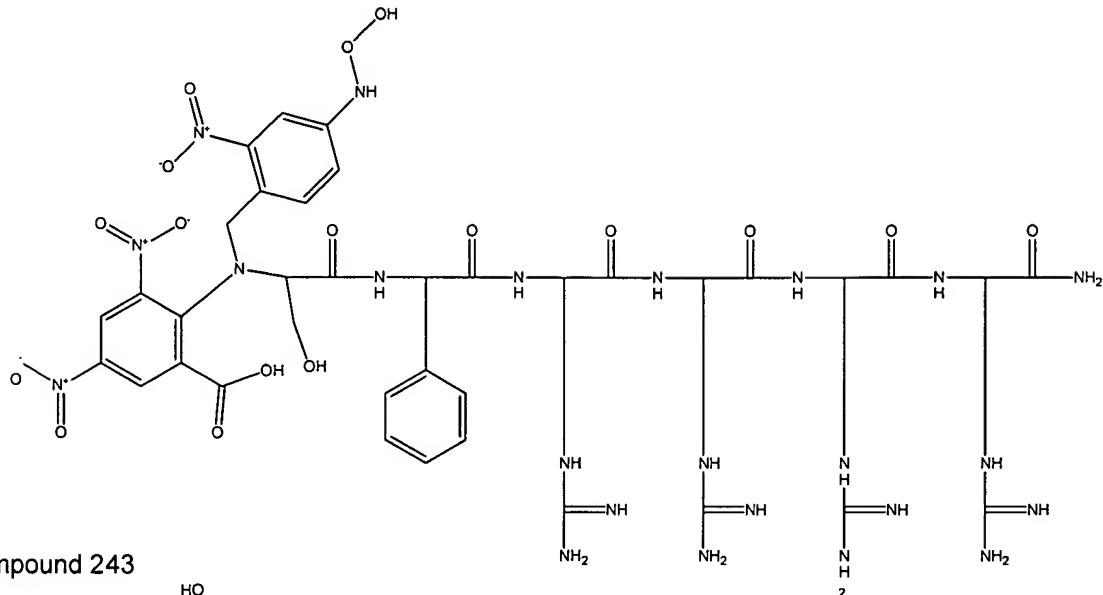
Compound 240



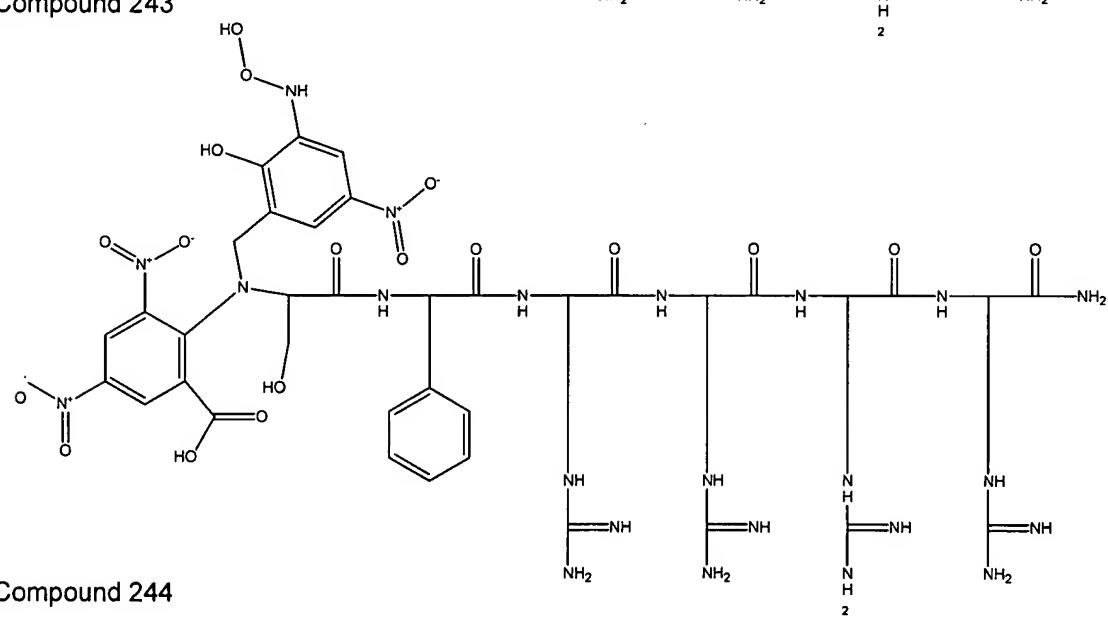
Compound 241



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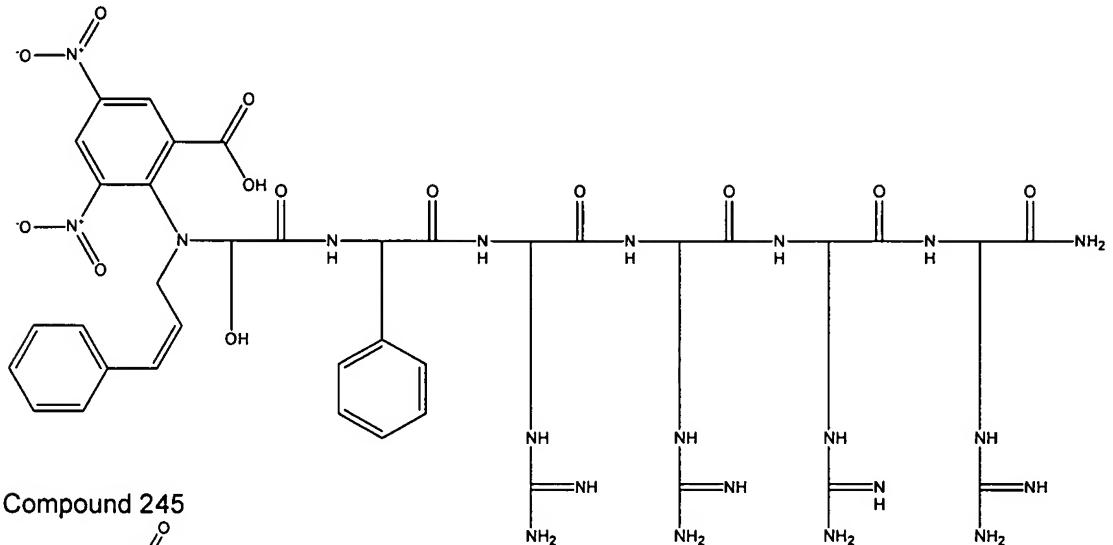


Compound 243

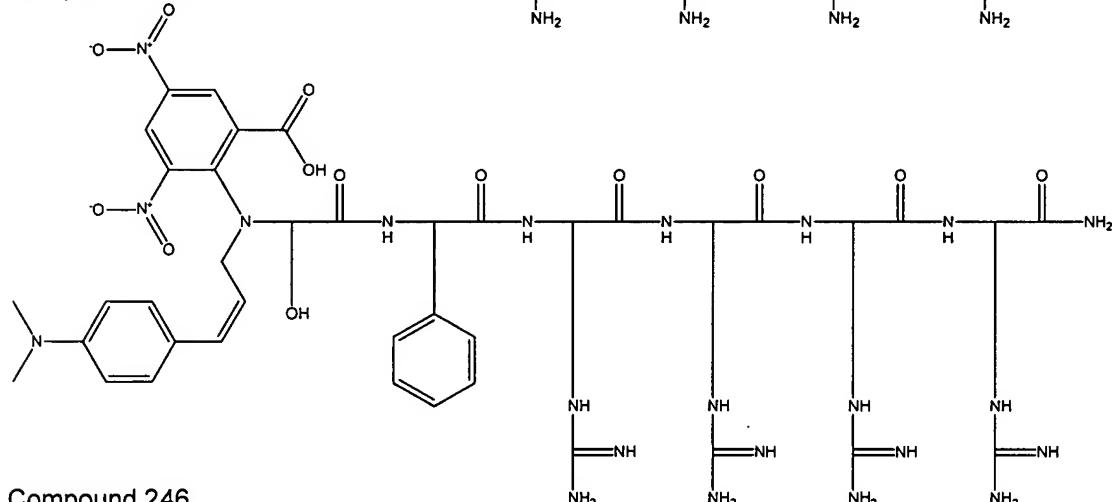


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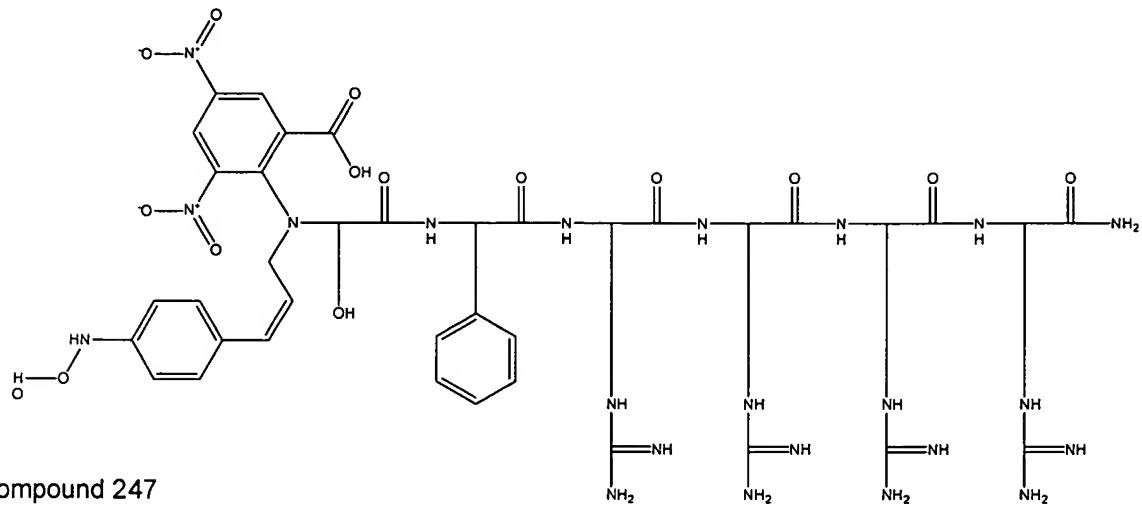


Compound 245

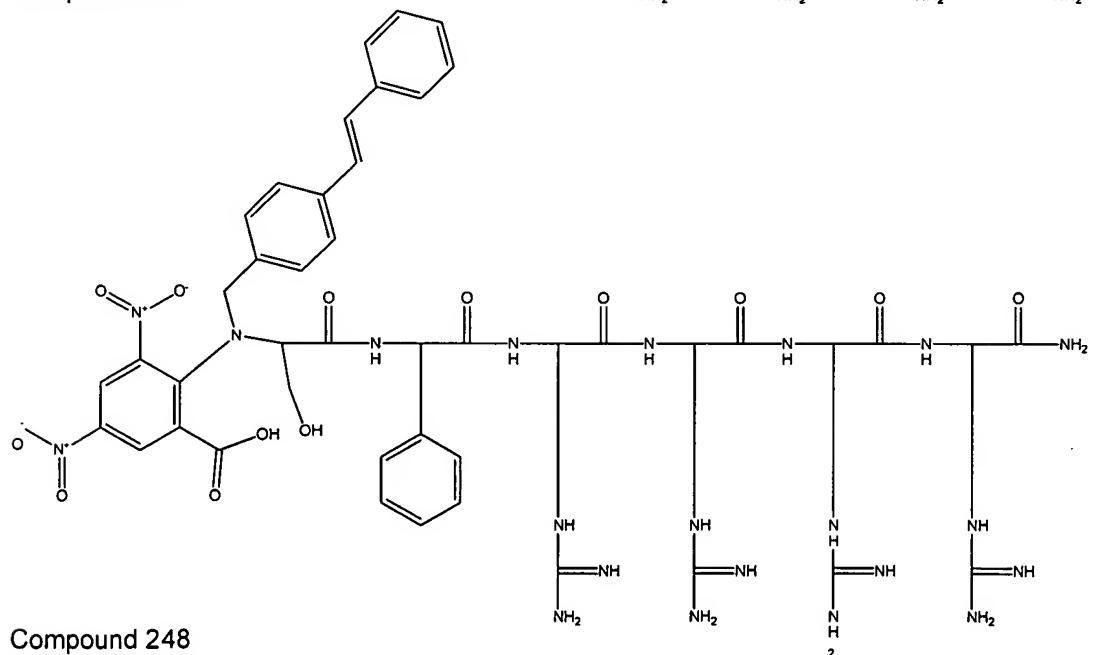


Compound 246

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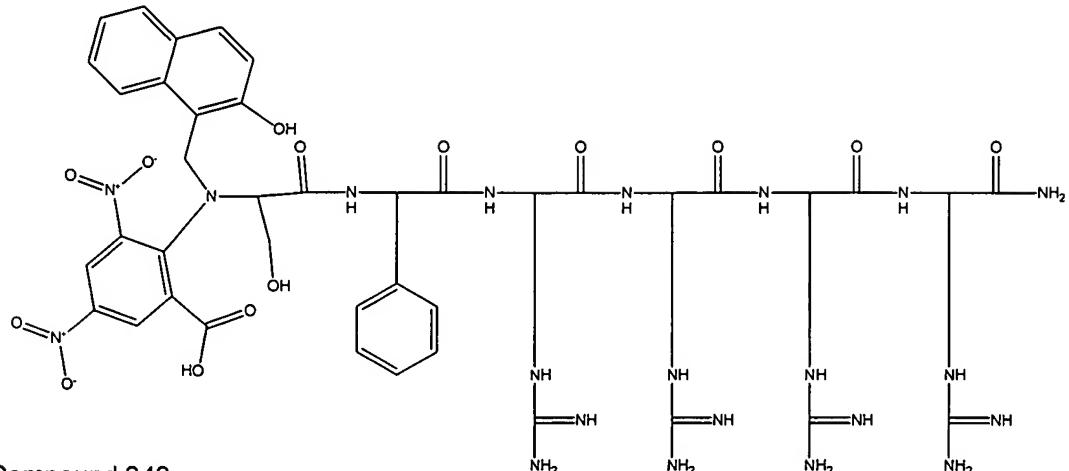


Compound 247

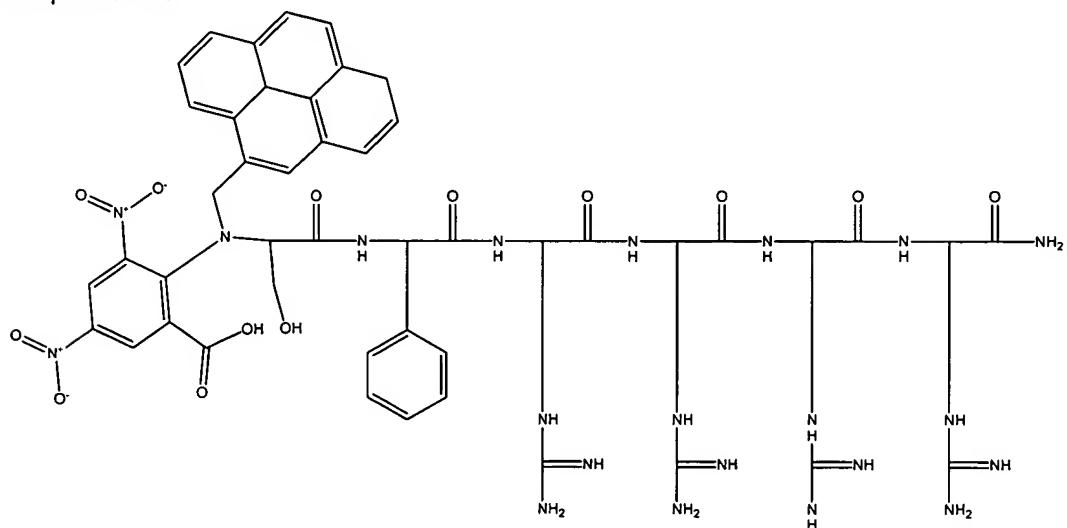


Compound 248

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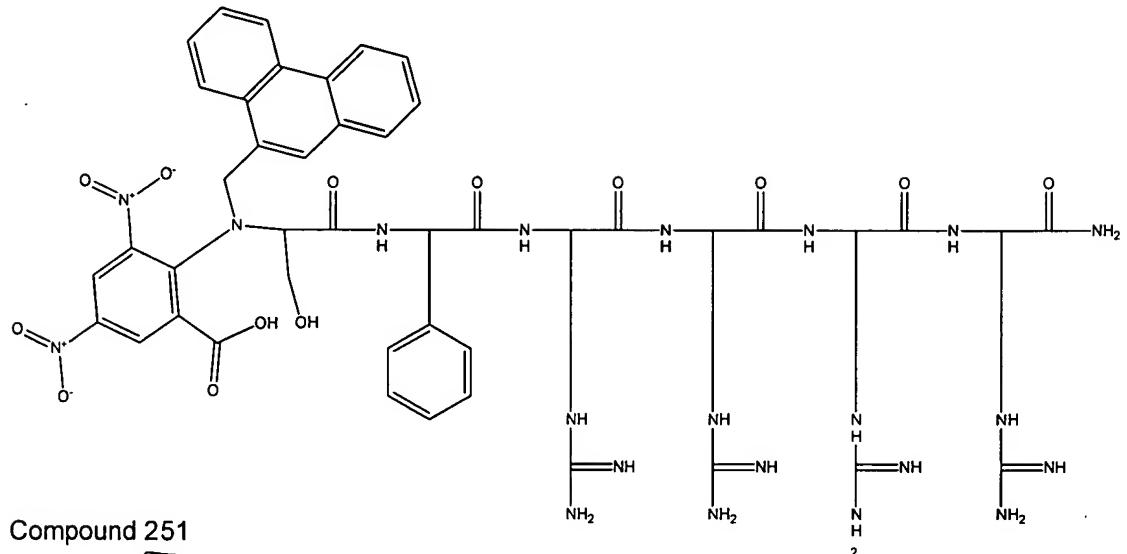


Compound 249

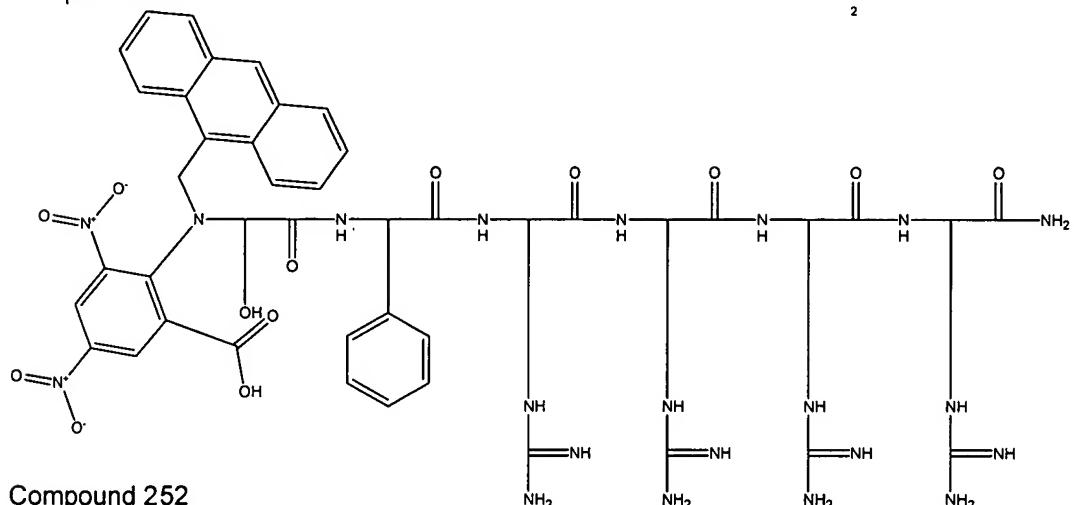


Compound 250

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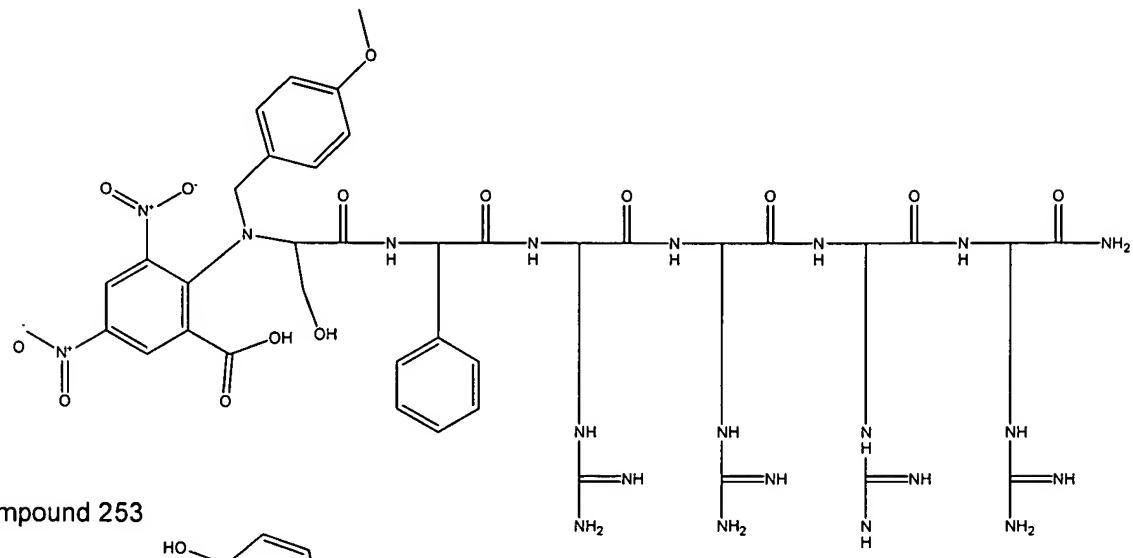


Compound 251

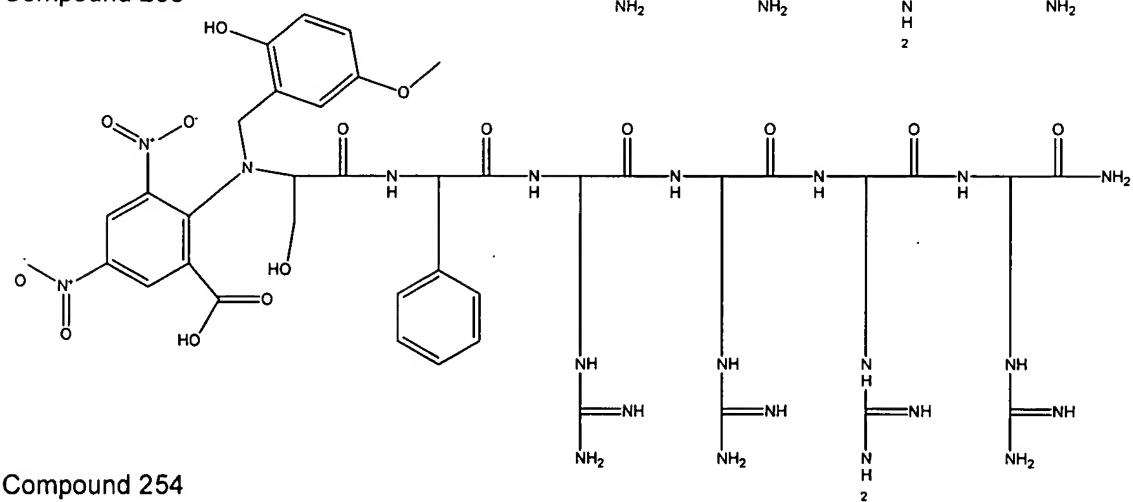


Compound 252

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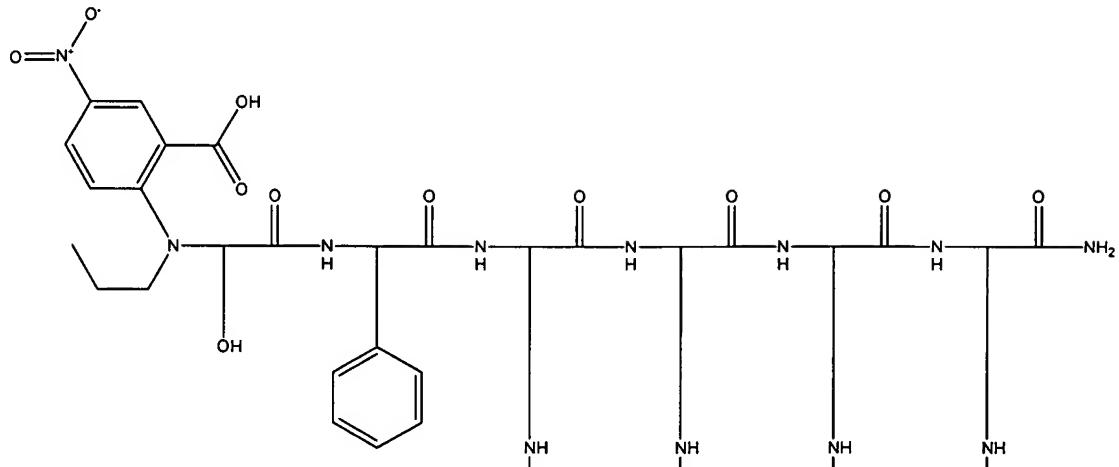


Compound 253

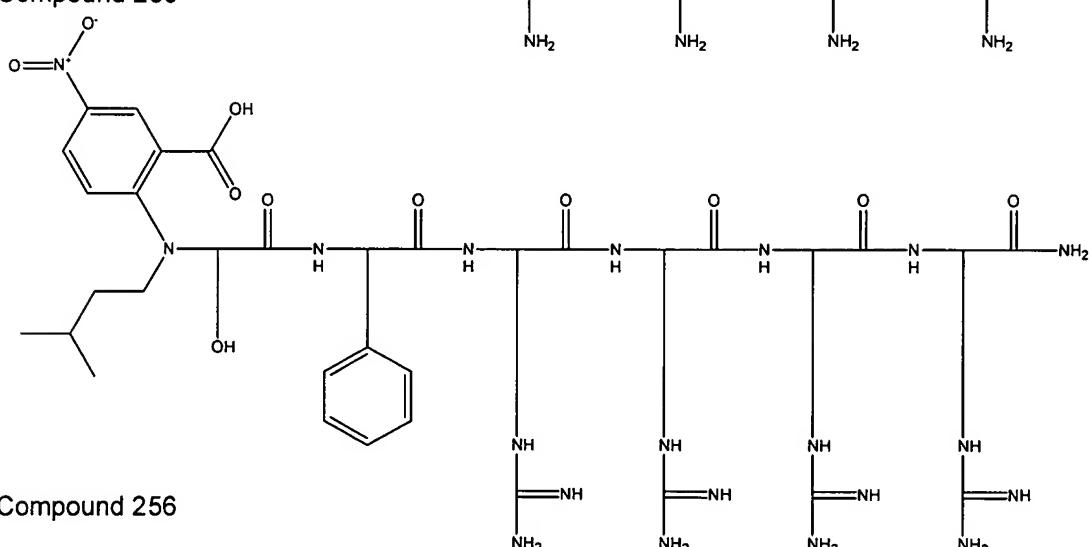


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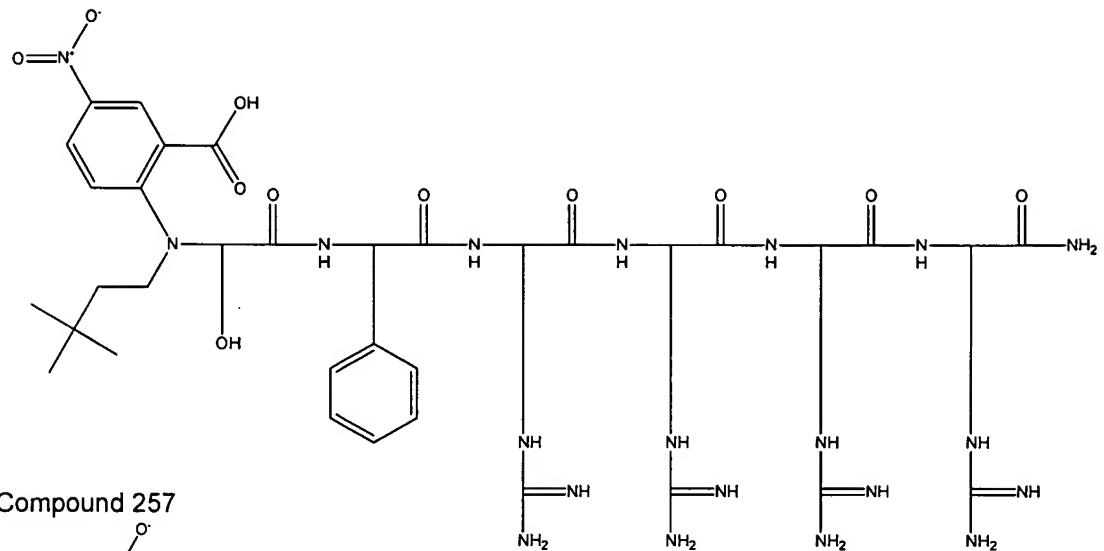


Compound 255

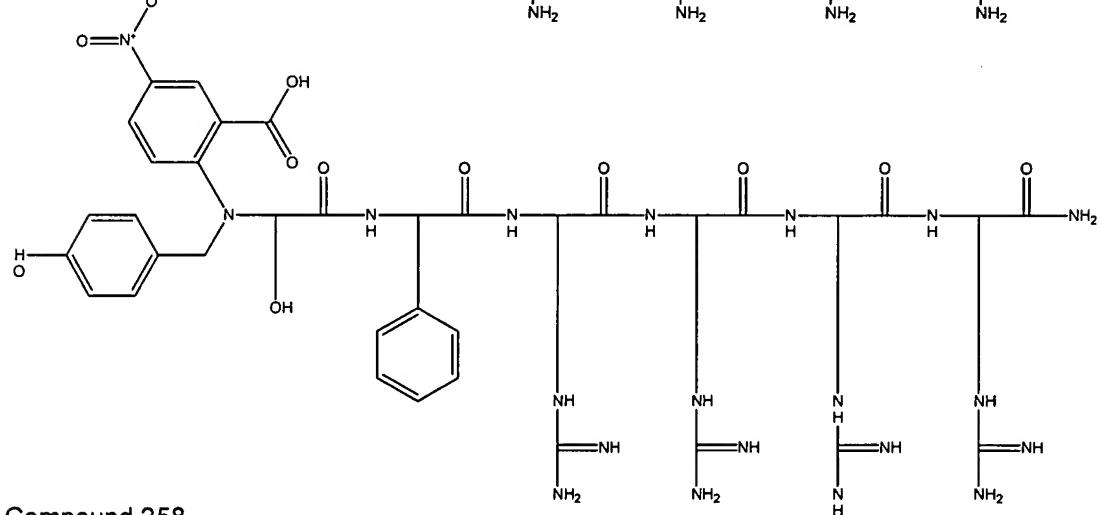


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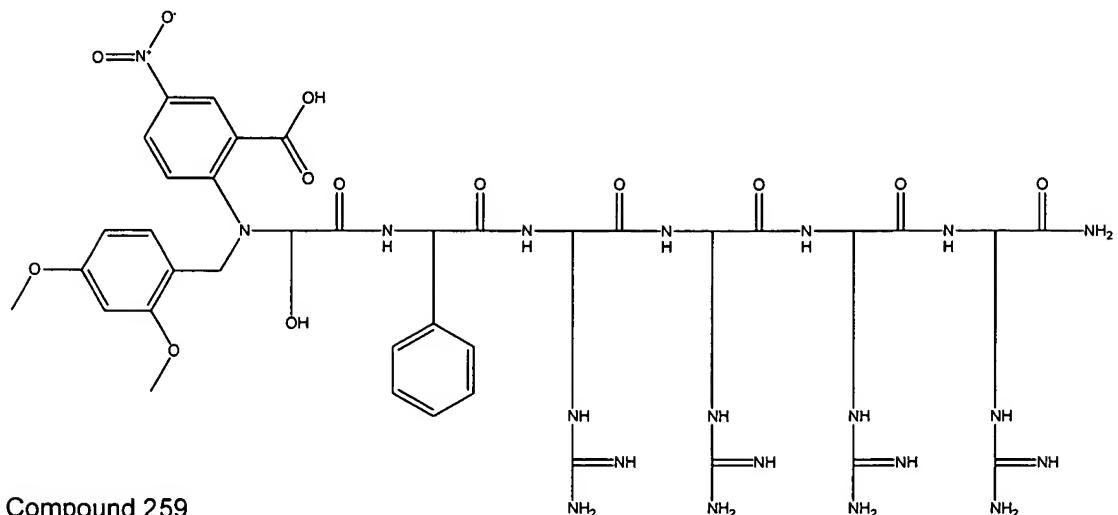


Compound 257

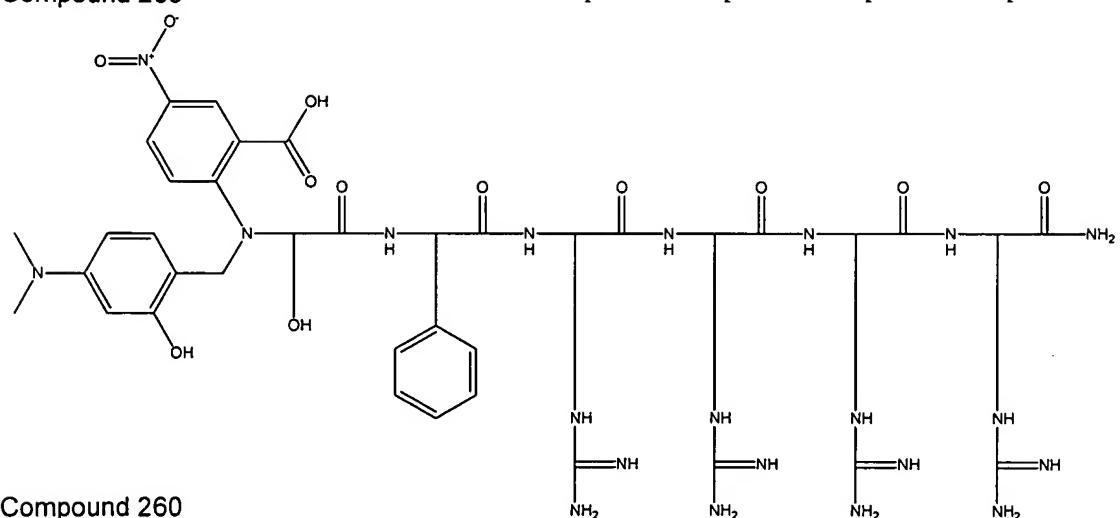


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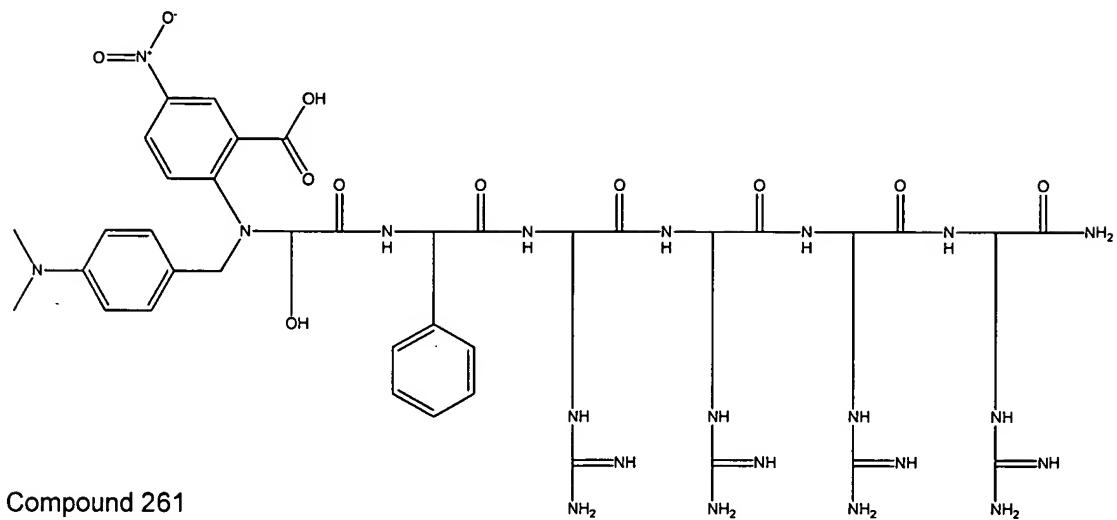


Compound 259

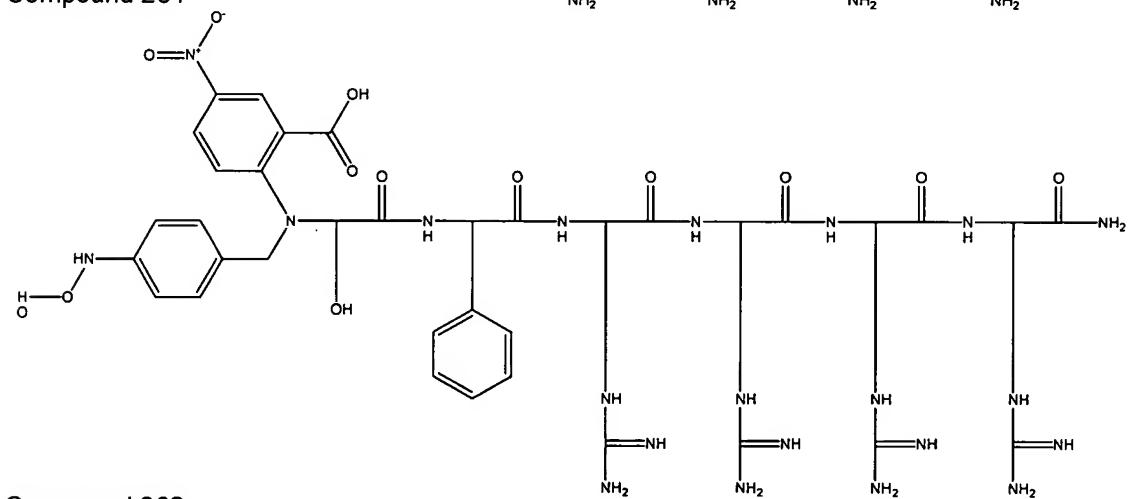


Compound 260

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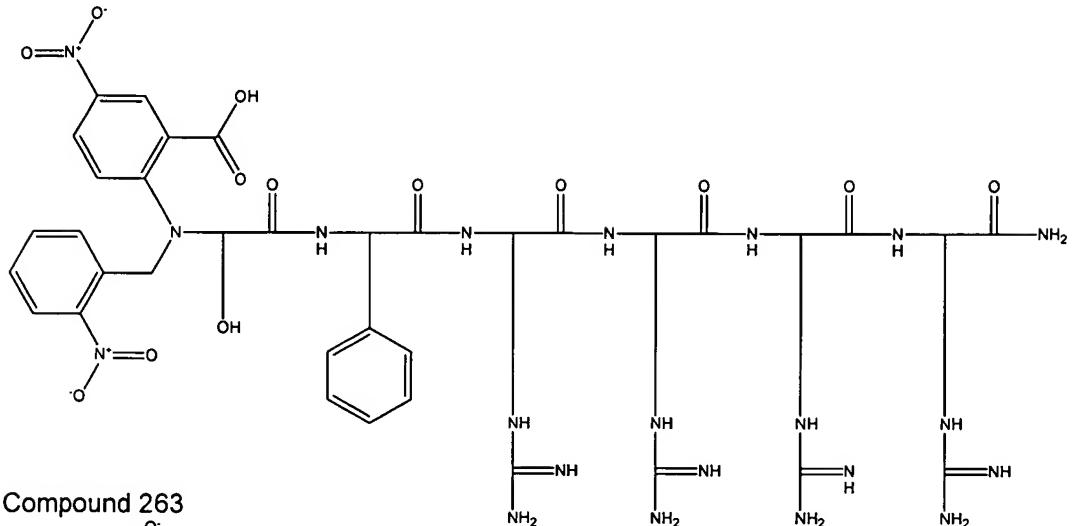


Compound 261

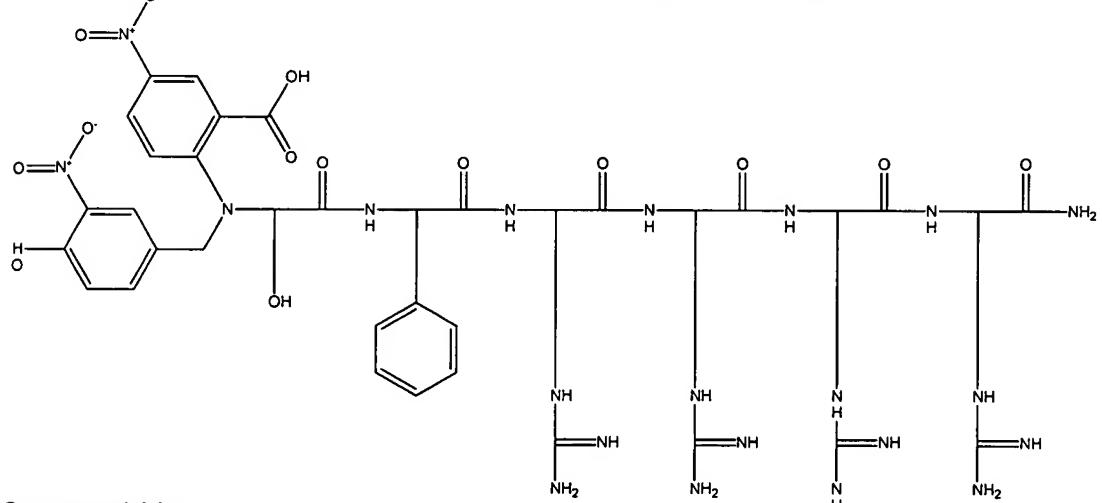


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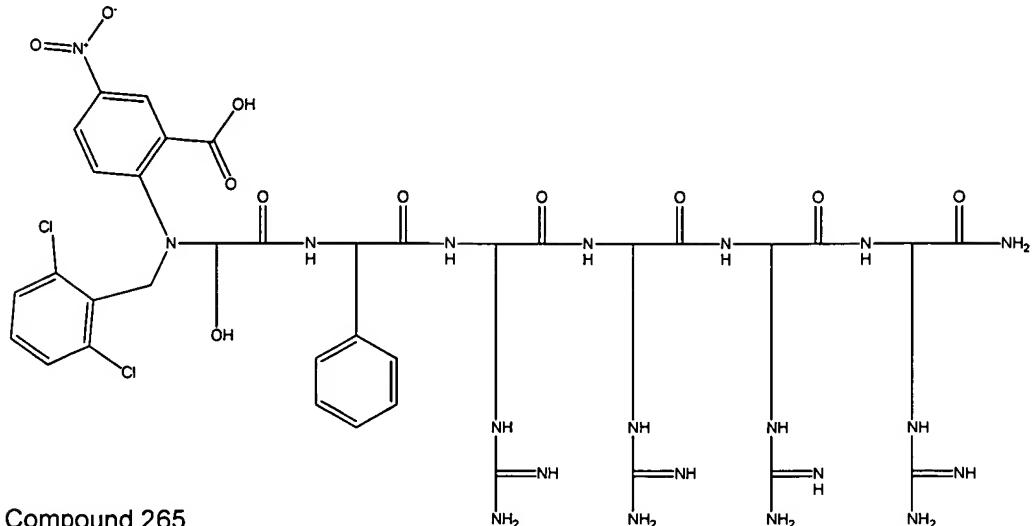


Compound 263

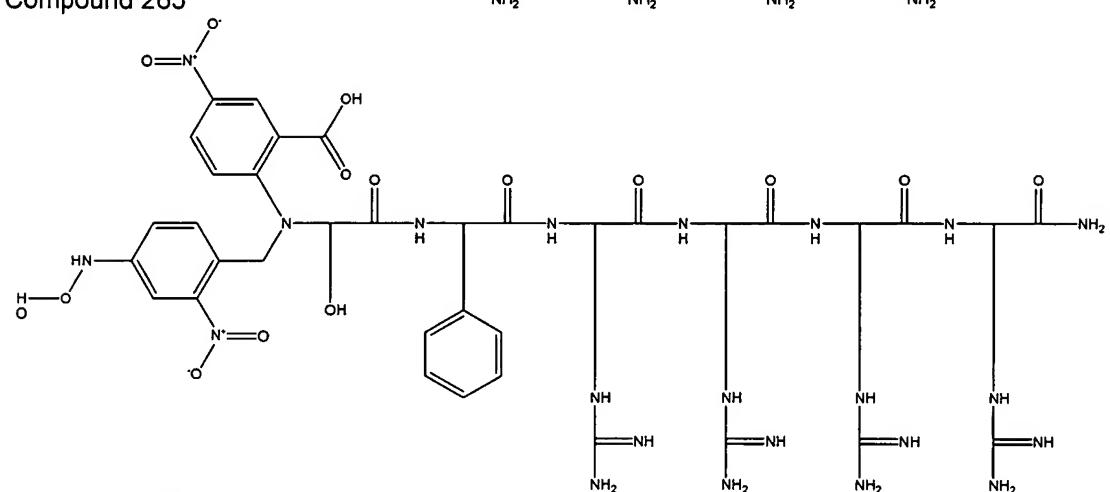


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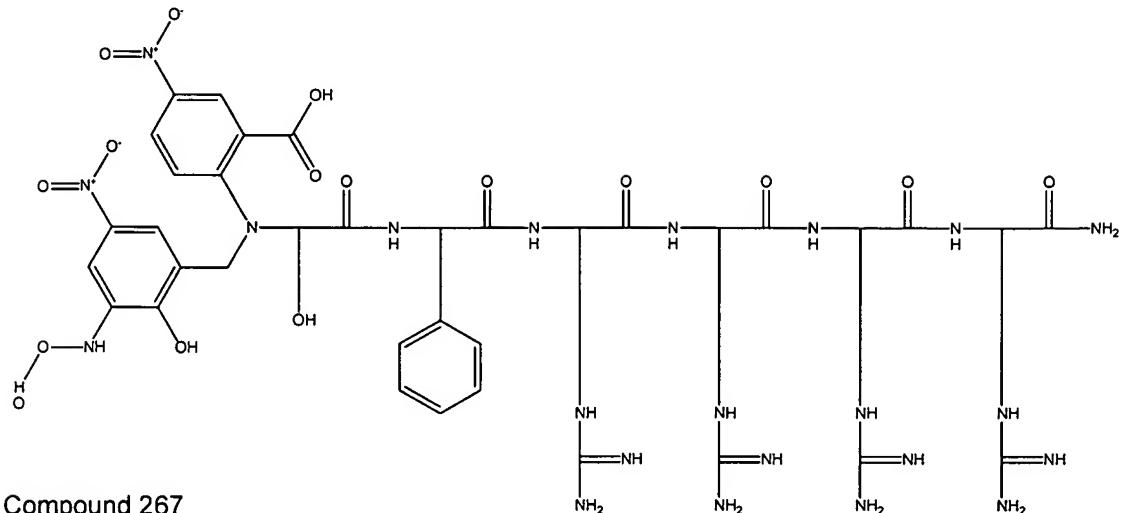


Compound 265

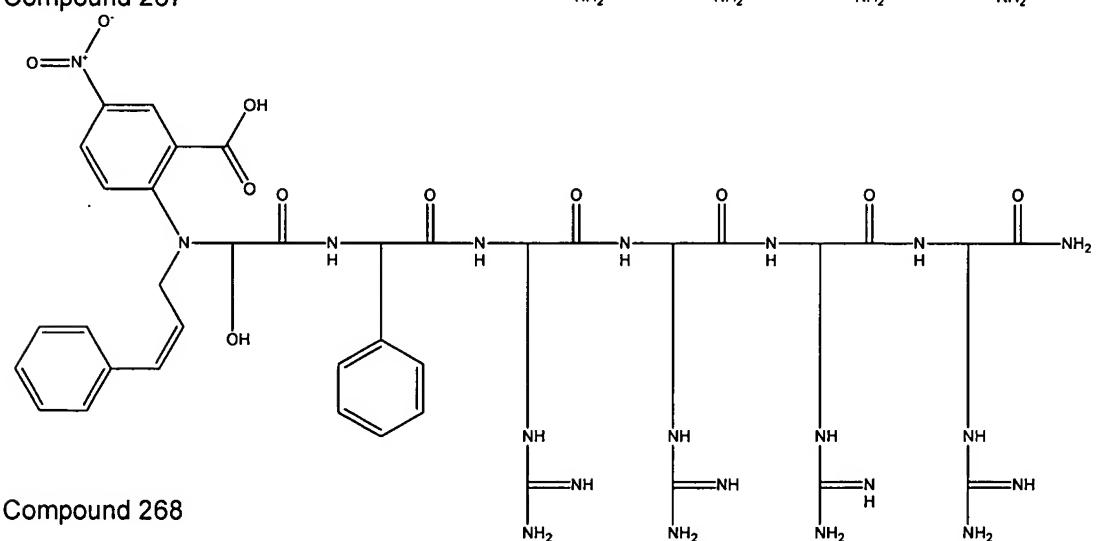


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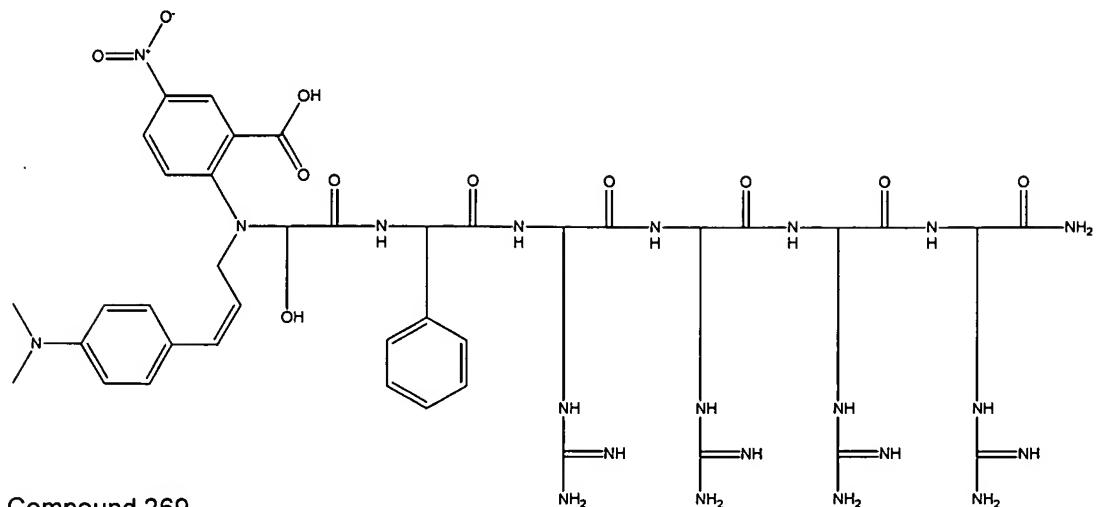


Compound 267

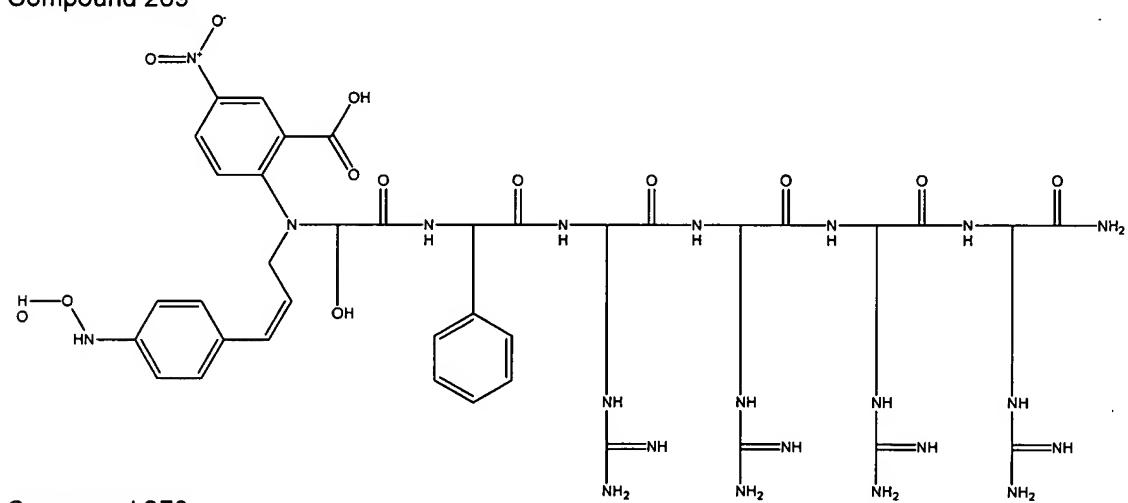


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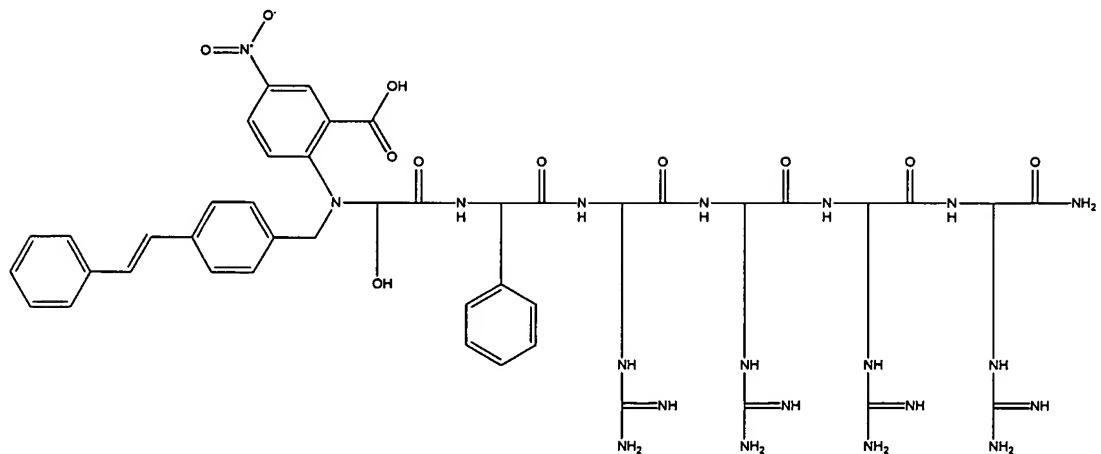


Compound 269

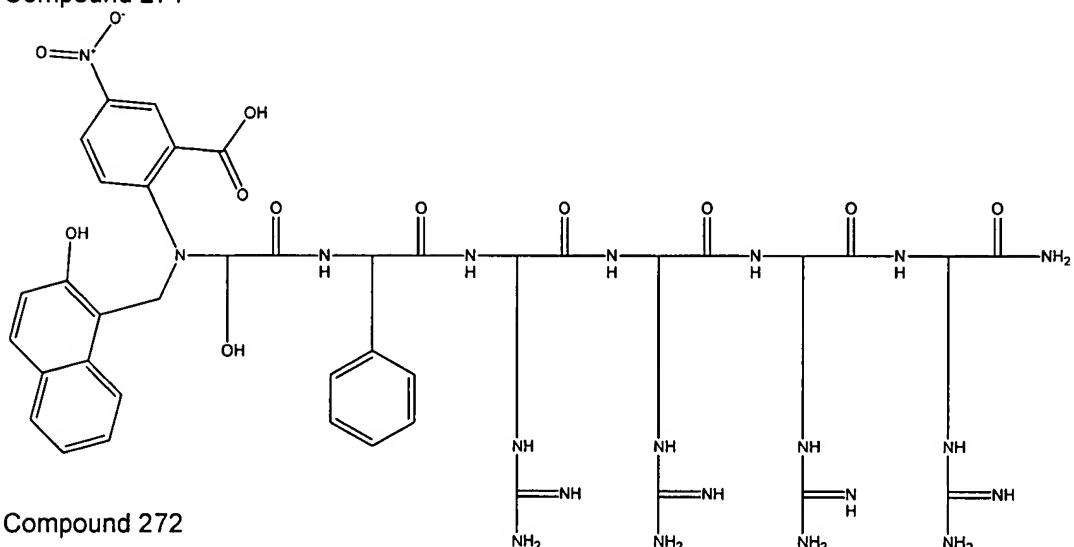


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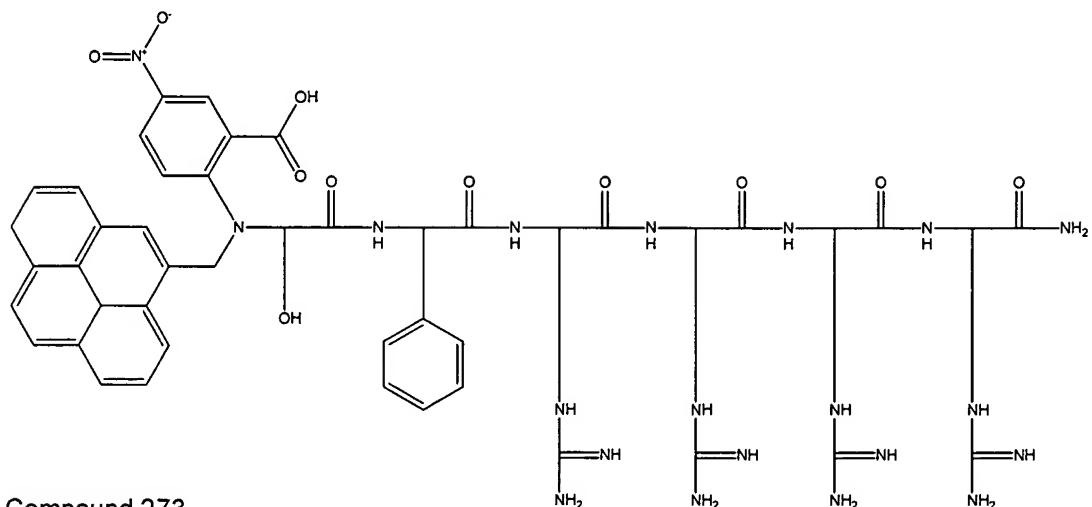


Compound 271

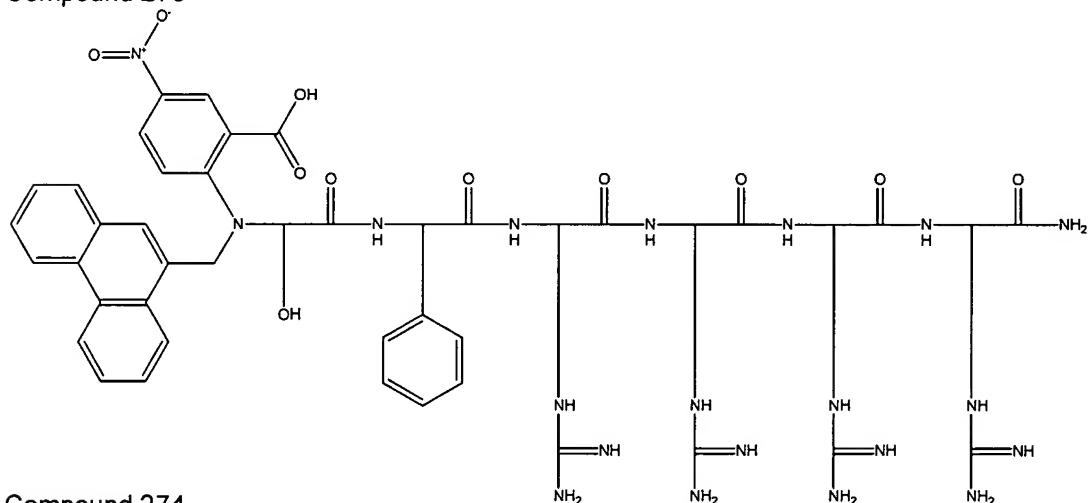


Compound 272

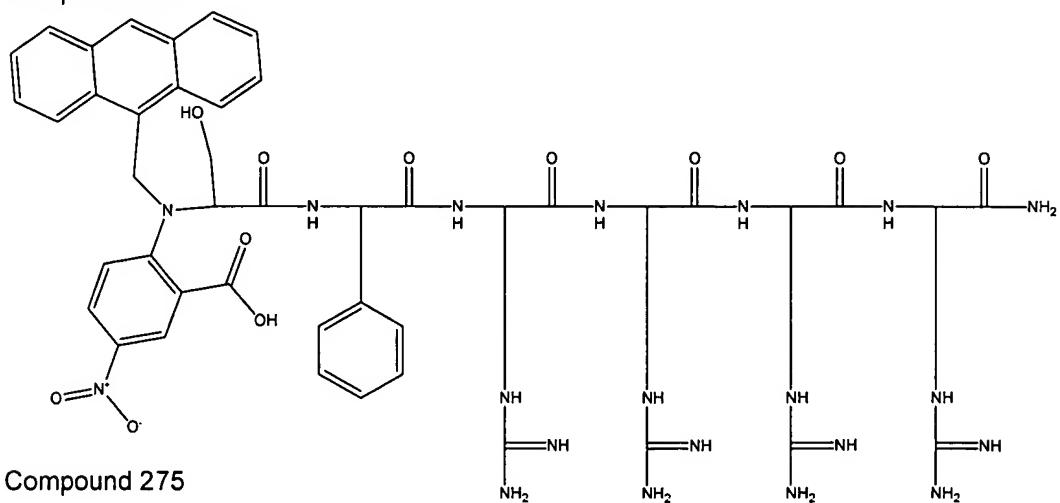
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Compound 273

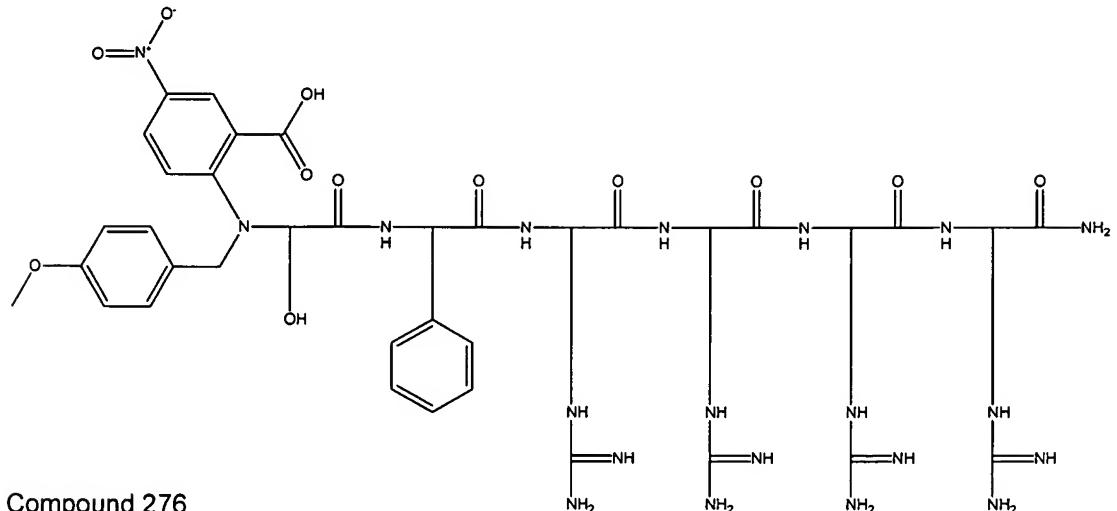


Compound 274

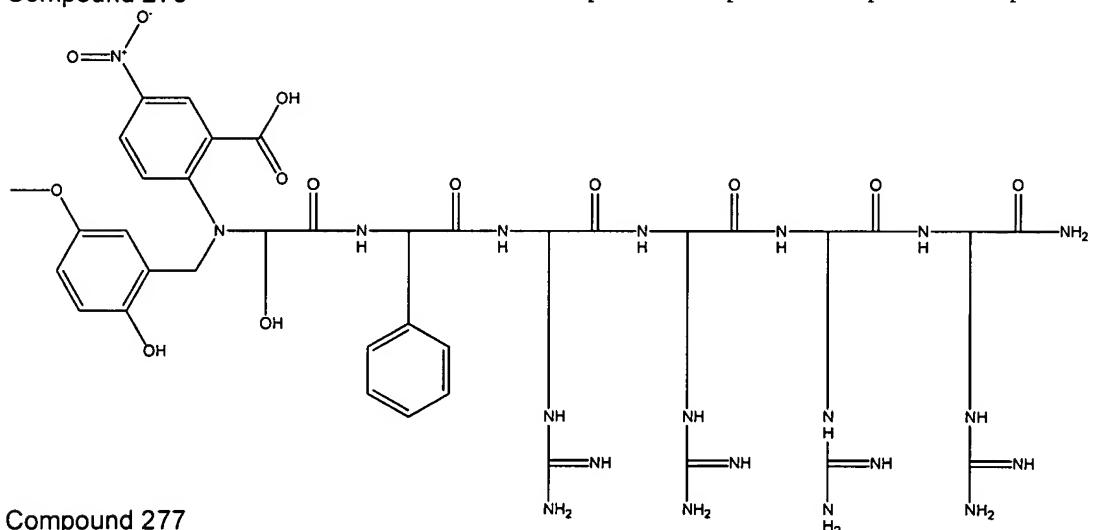


Compound 275

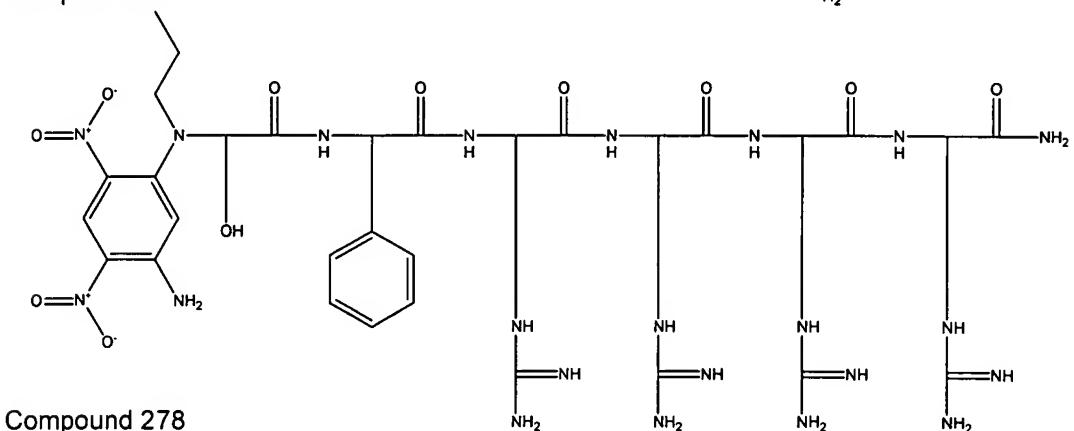
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Compound 276

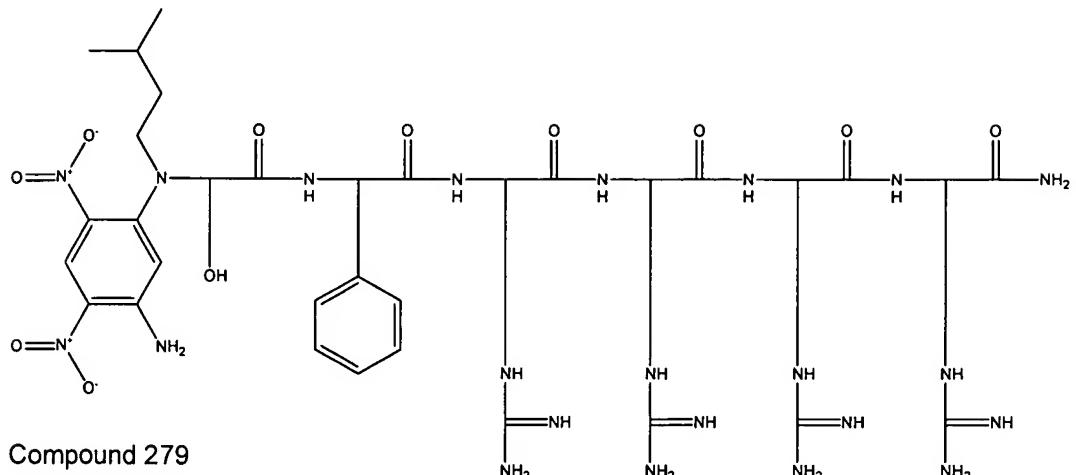


Compound 277

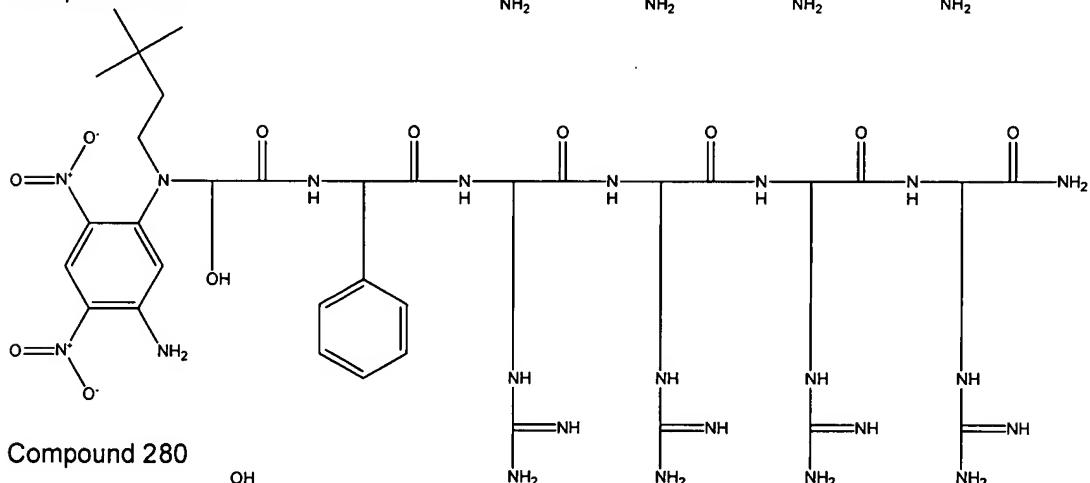


Compound 278

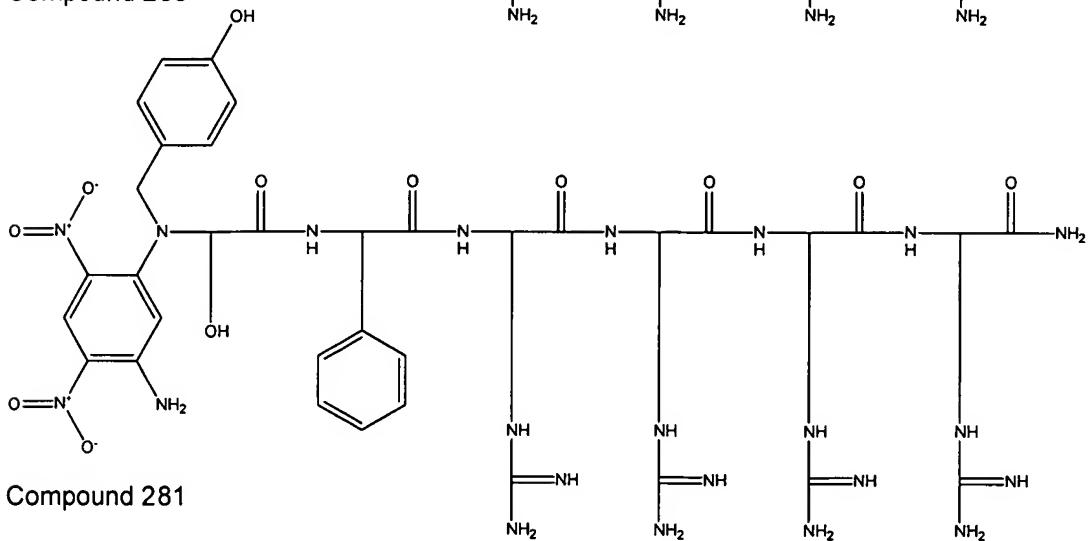
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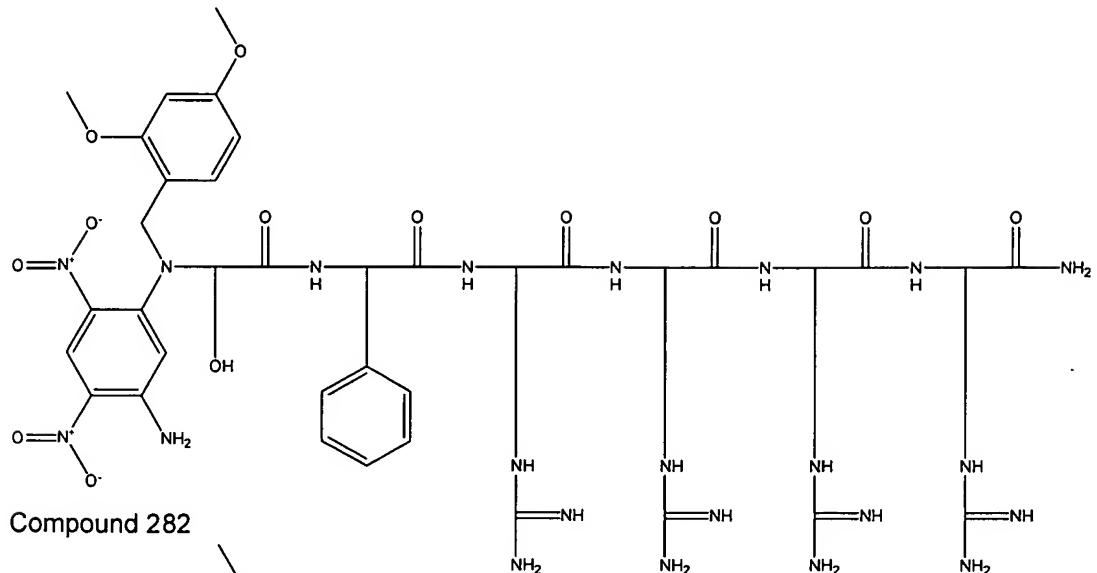
Compound 279



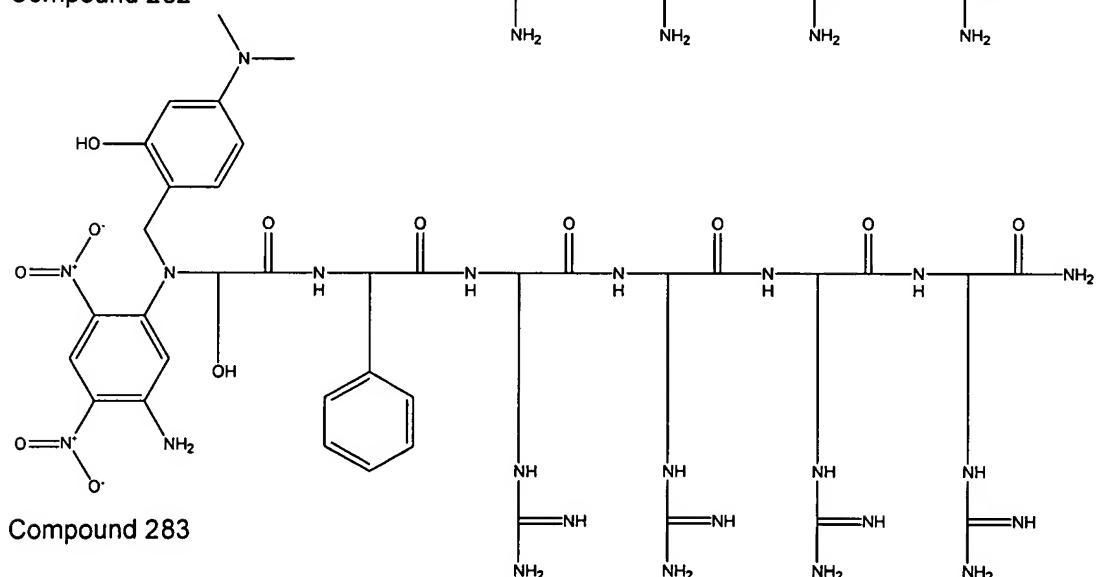
Compound 280



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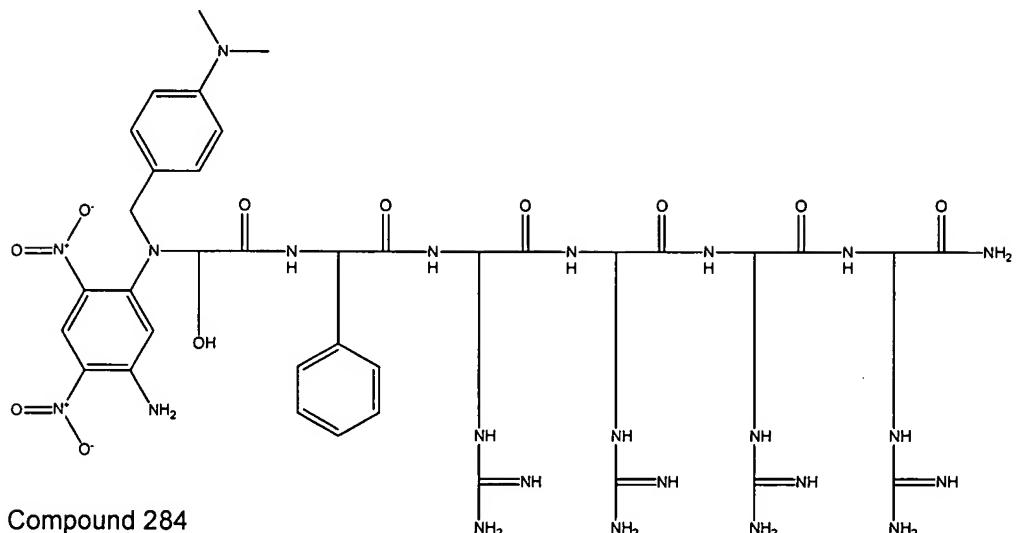


Compound 282

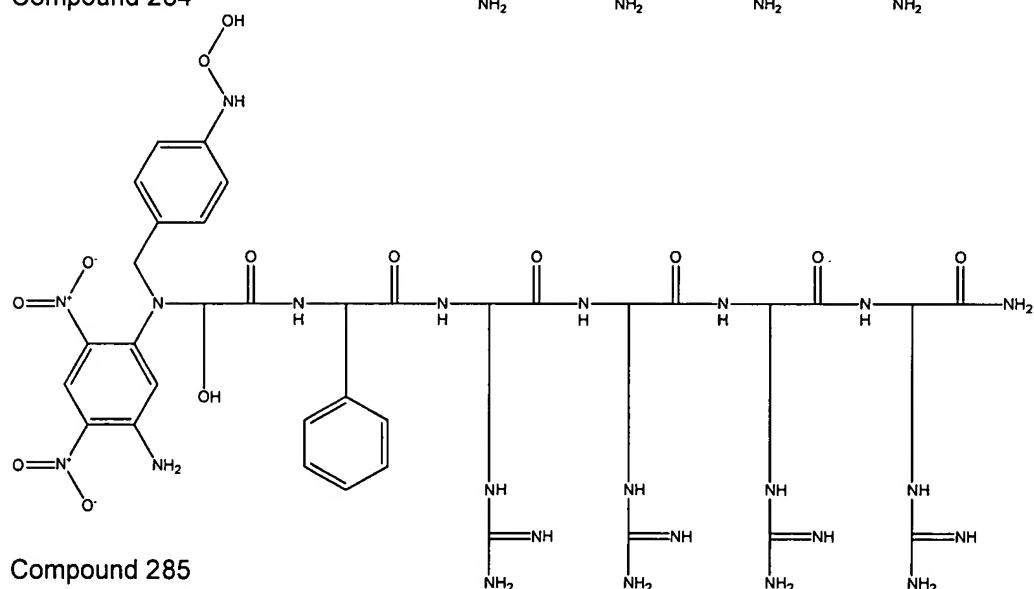


Compound 283

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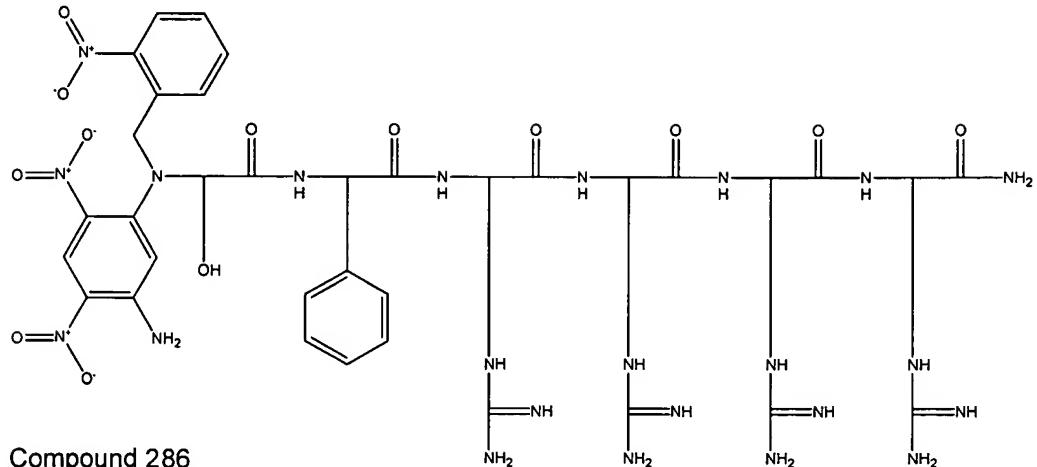


Compound 284

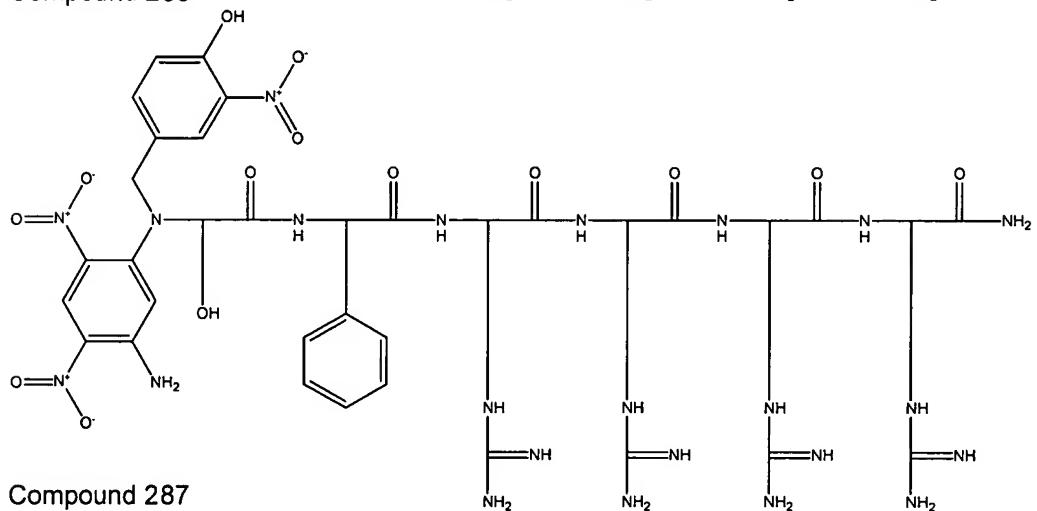


Compound 285

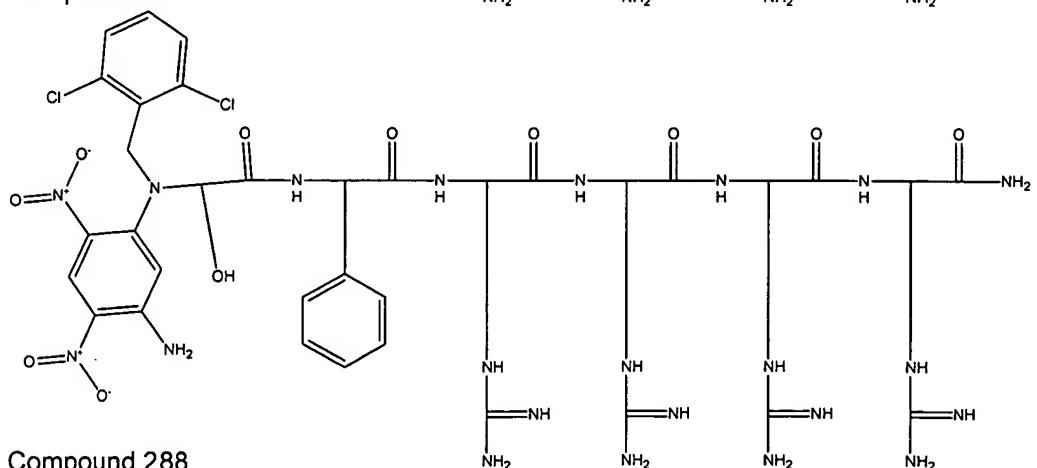
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Compound 286

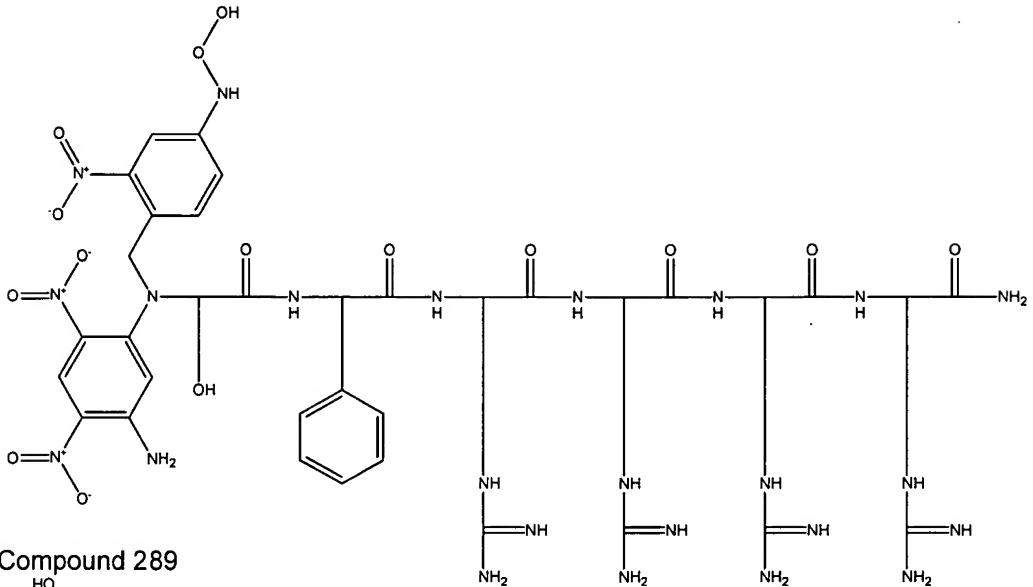


Compound 287

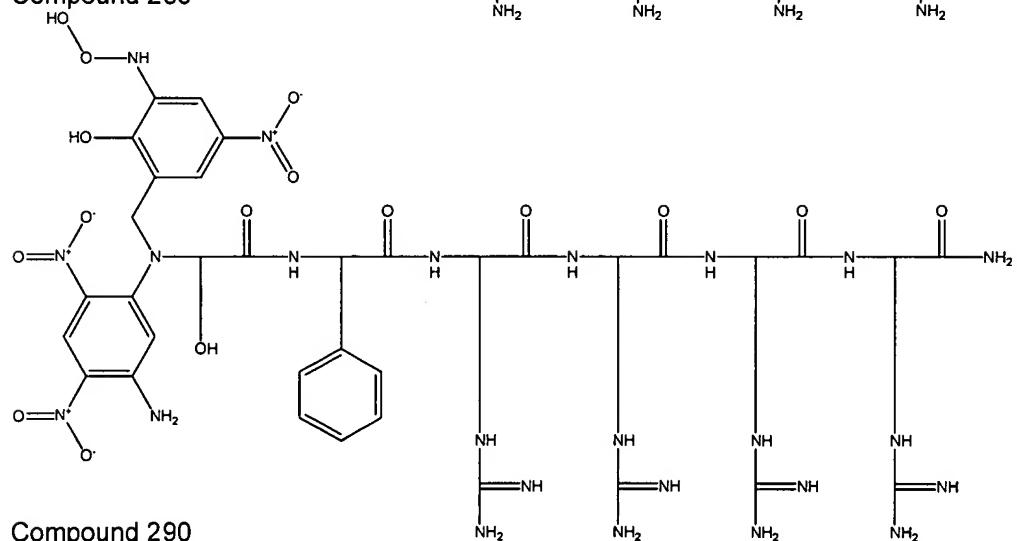


Compound 288

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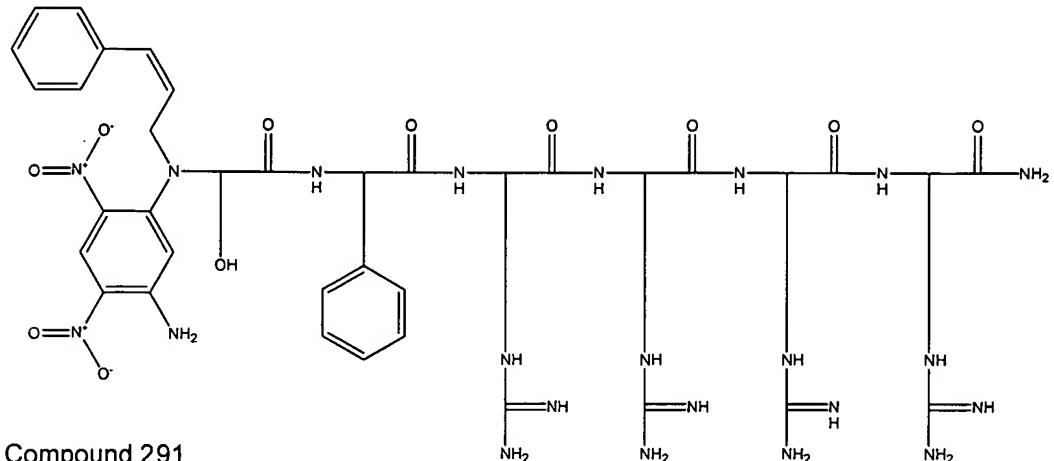


Compound 289

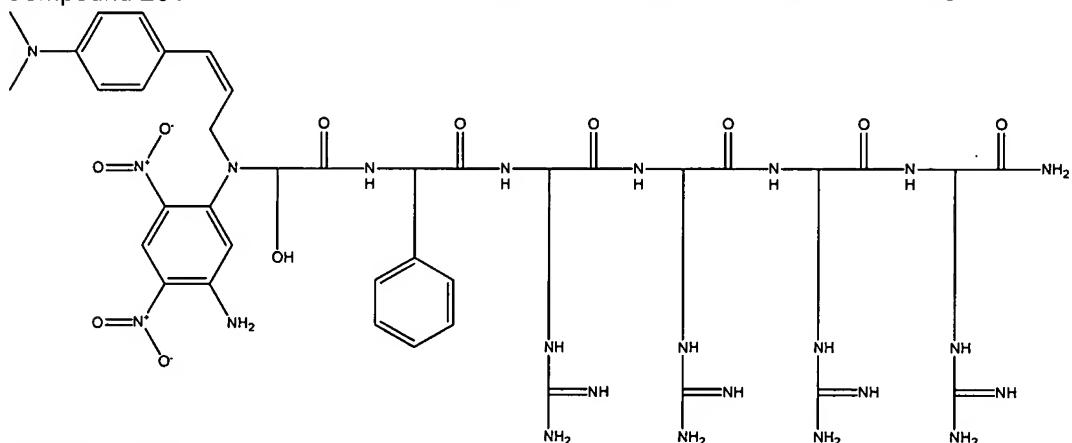


Compound 290

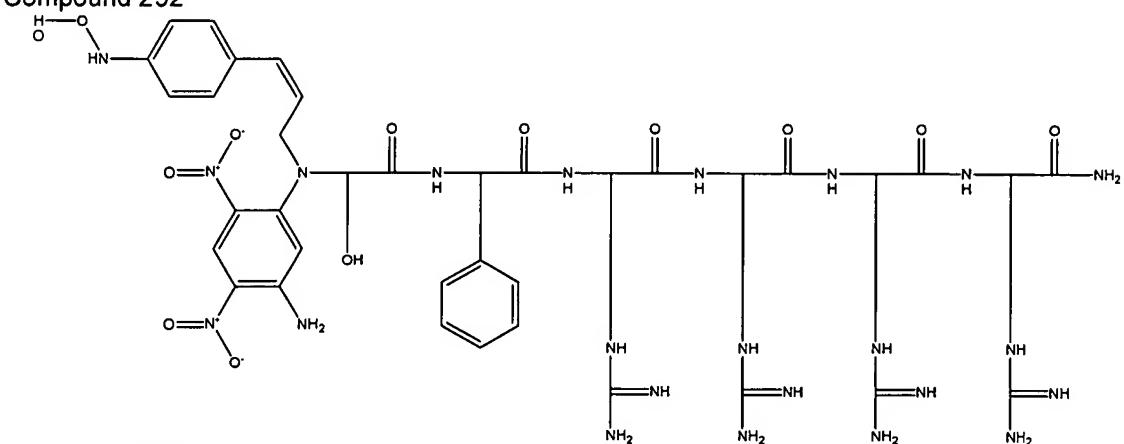
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Compound 291

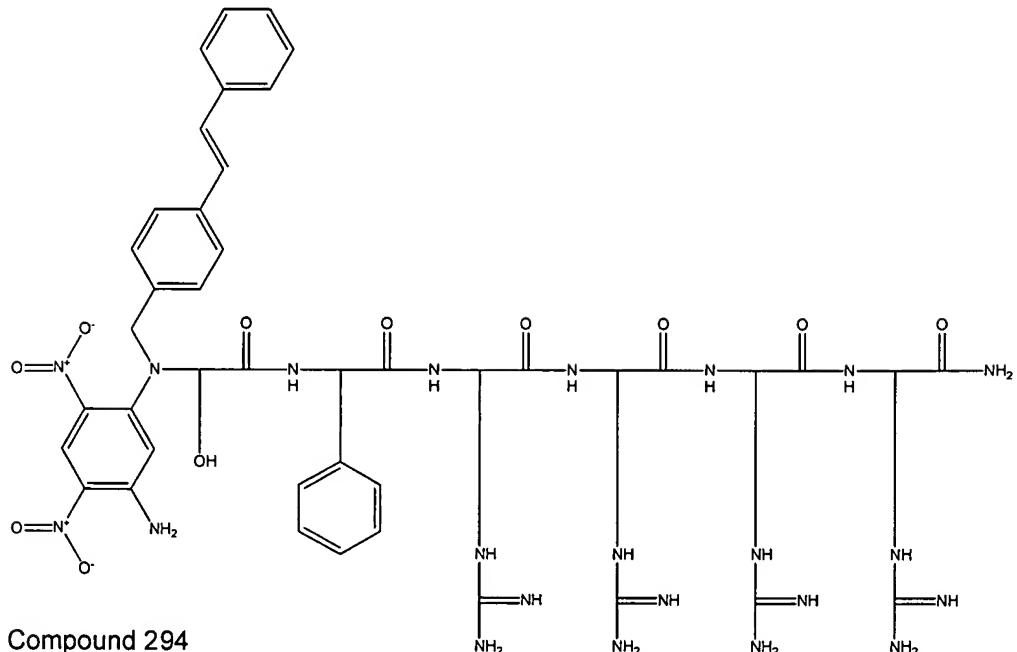


Compound 292

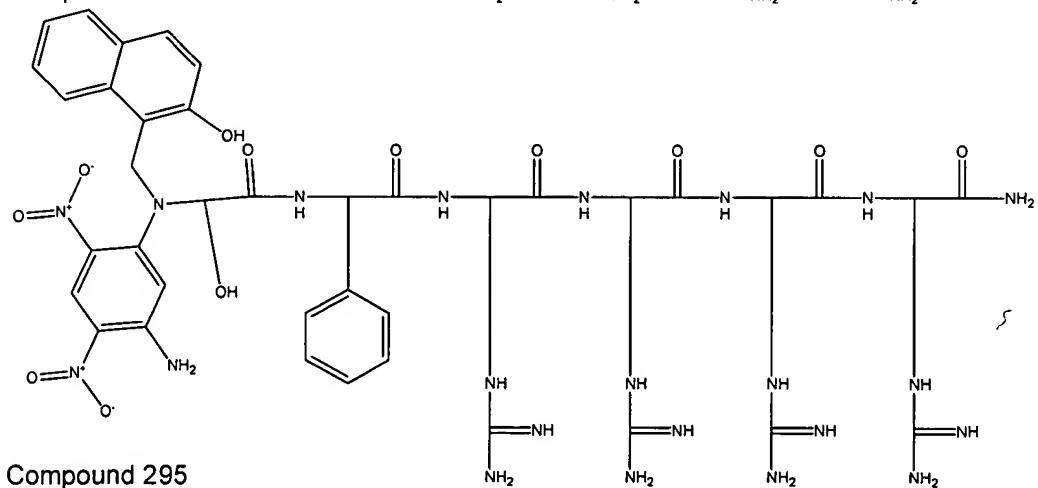


Compound 293

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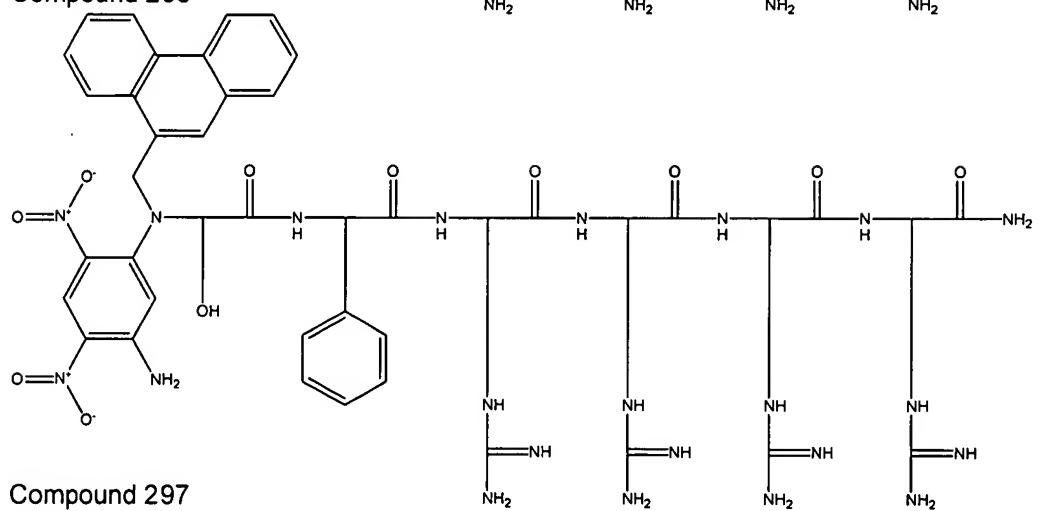
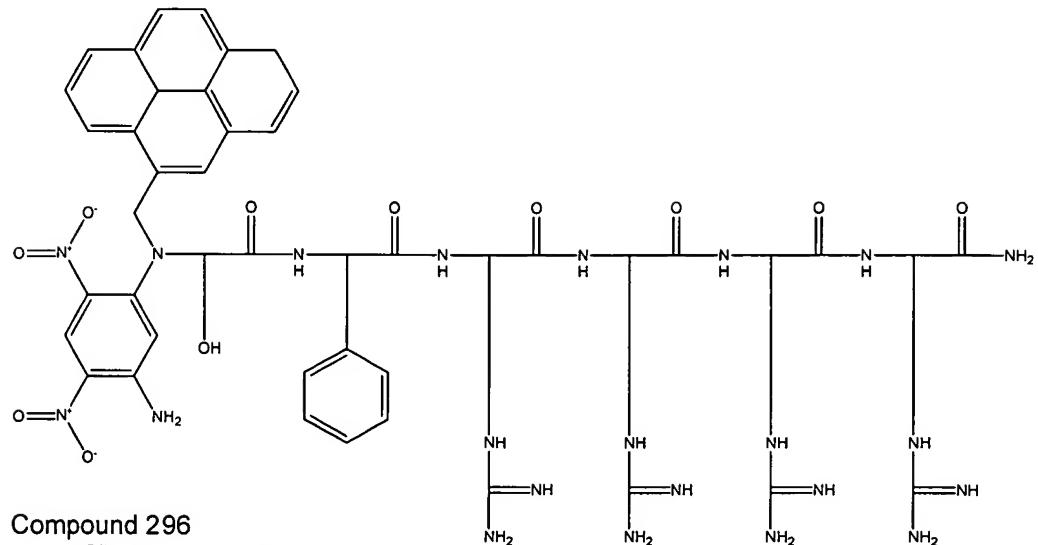


Compound 294

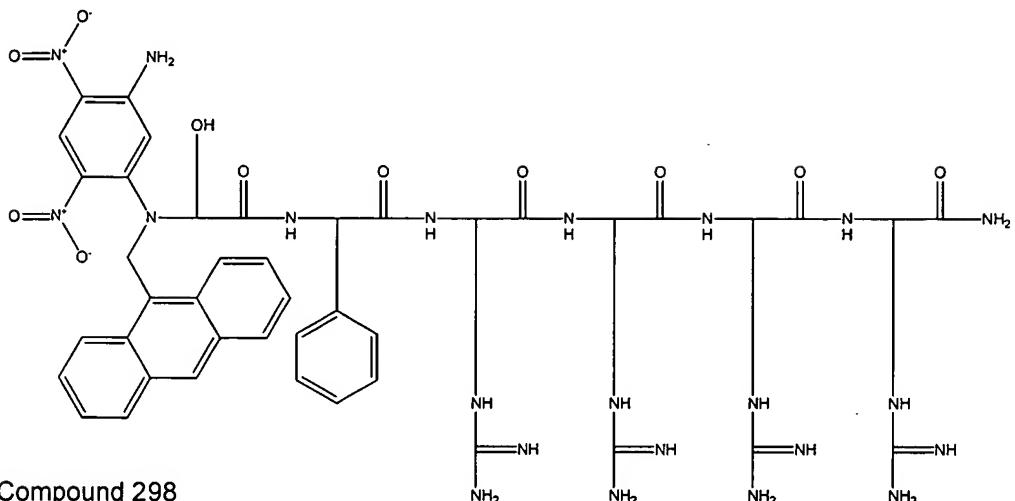


Compound 295

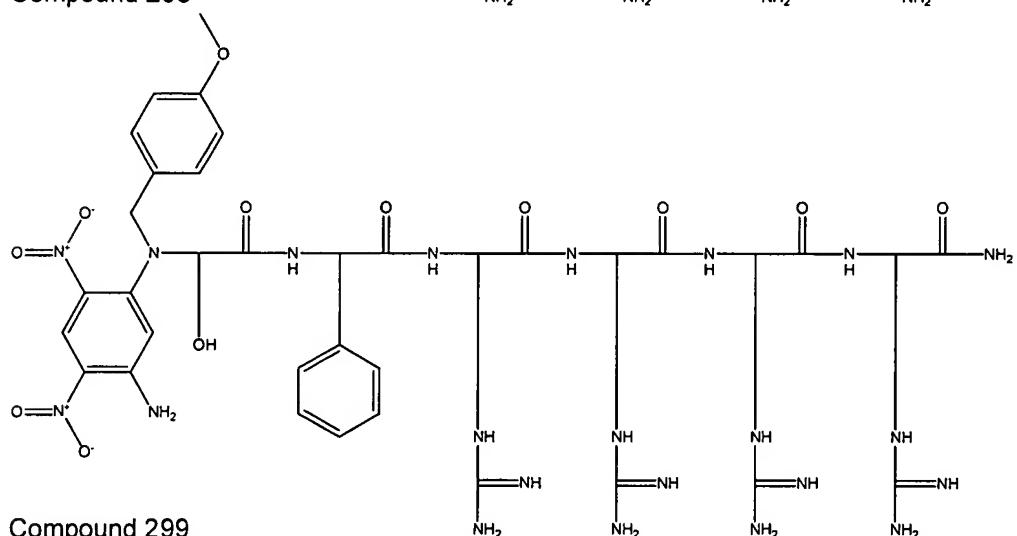
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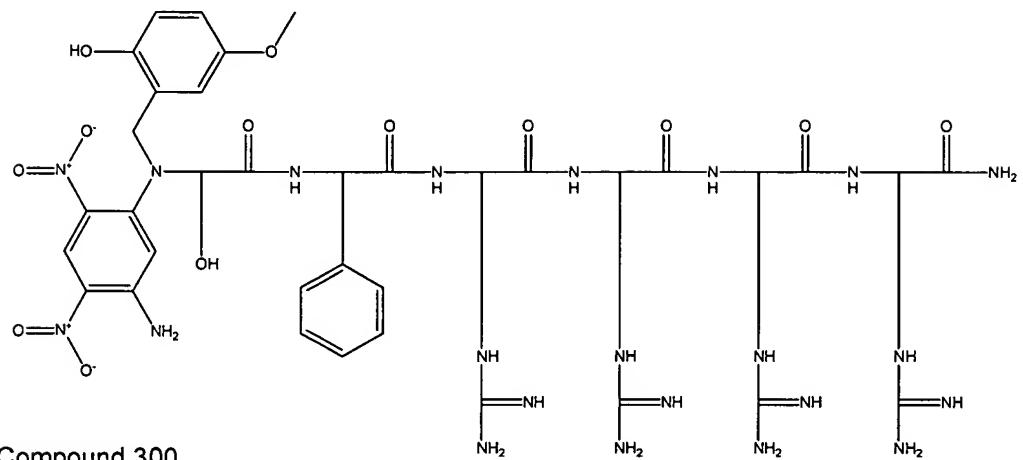


Compound 298

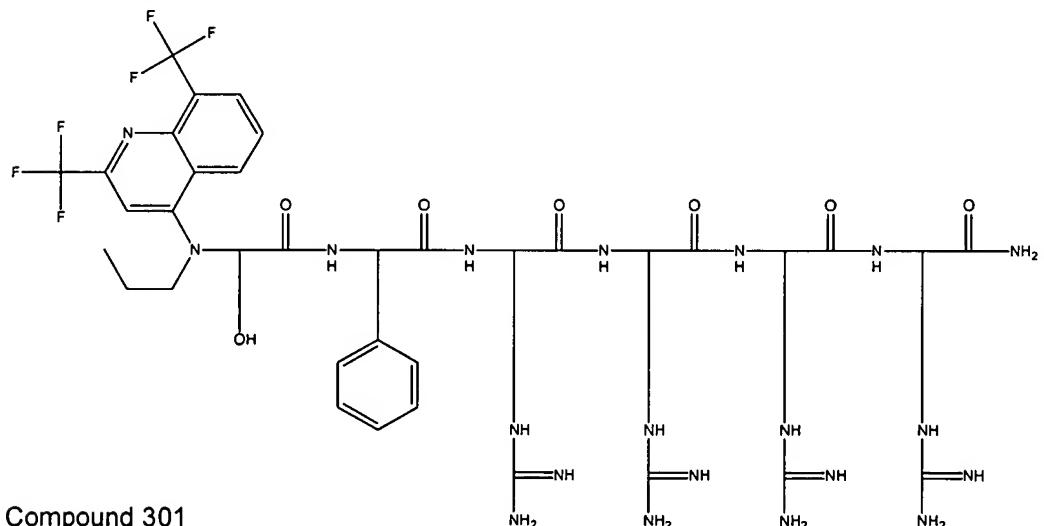


Compound 299

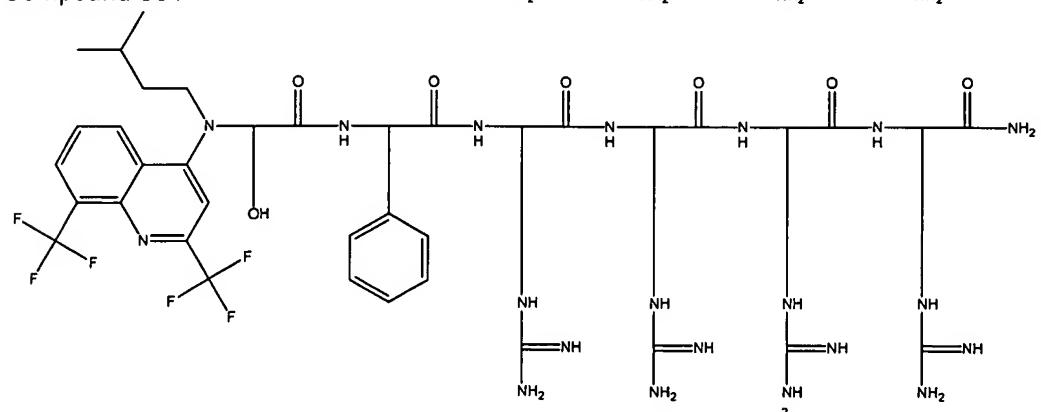
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Compound 300

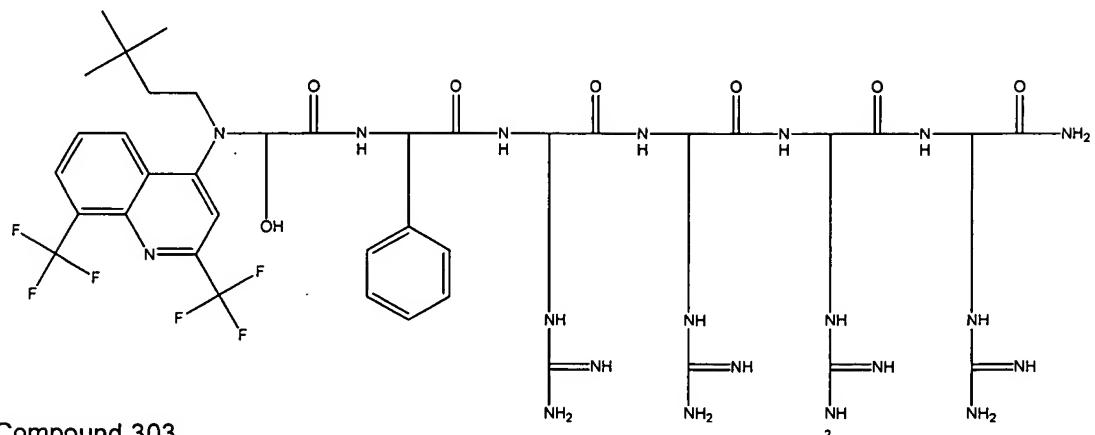


Compound 301

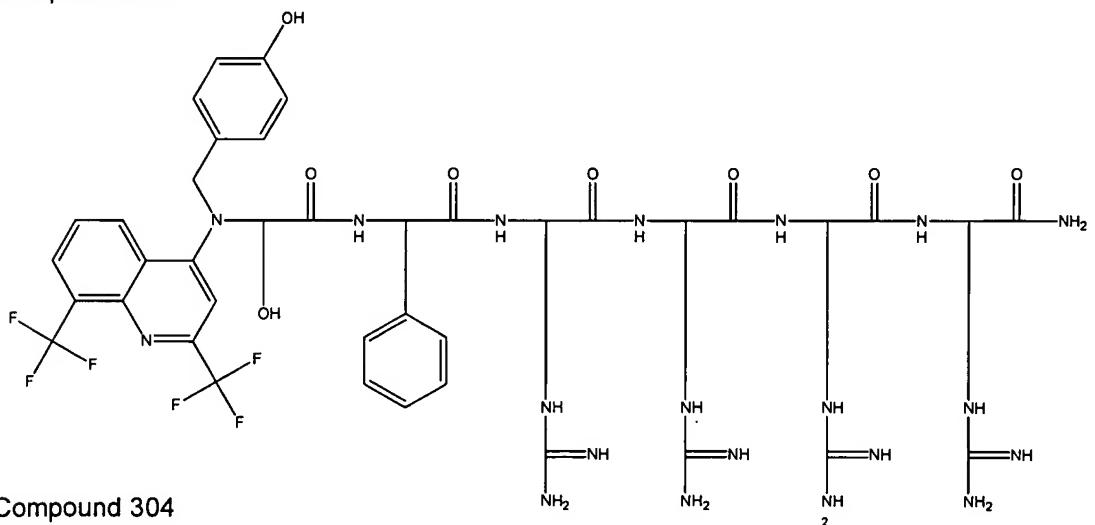


Compound 302

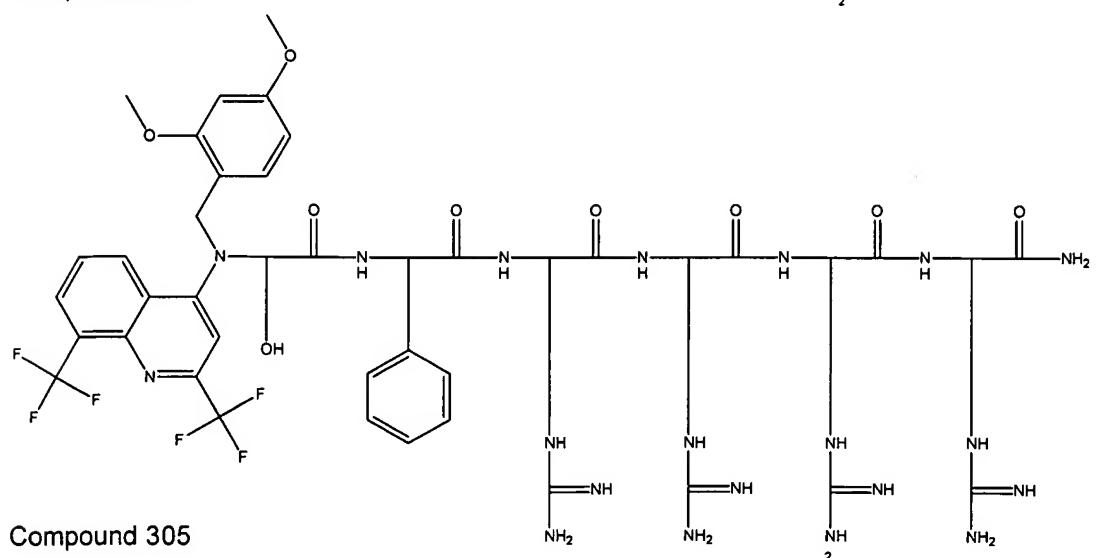
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Compound 303

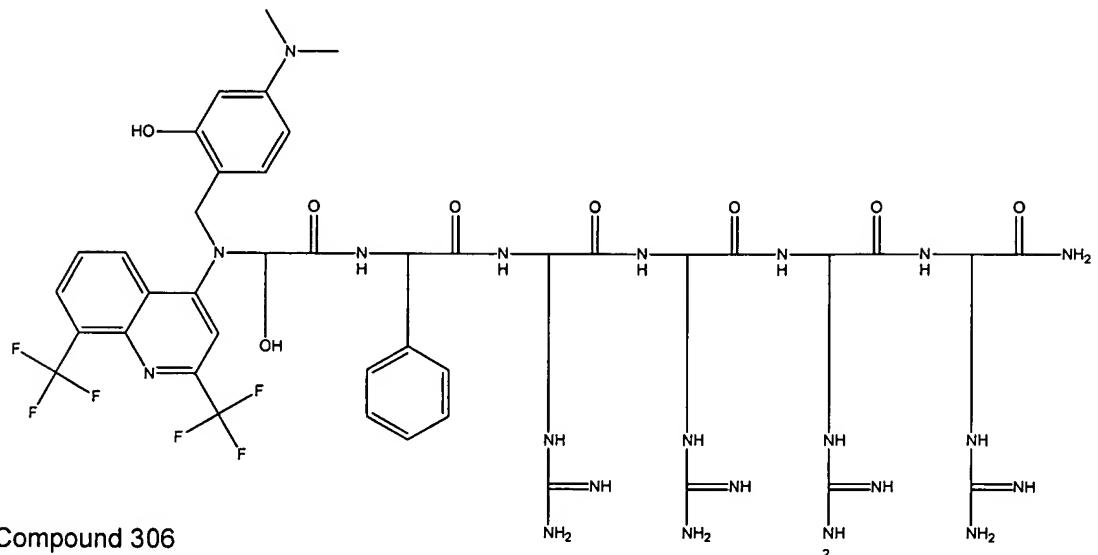


Compound 304

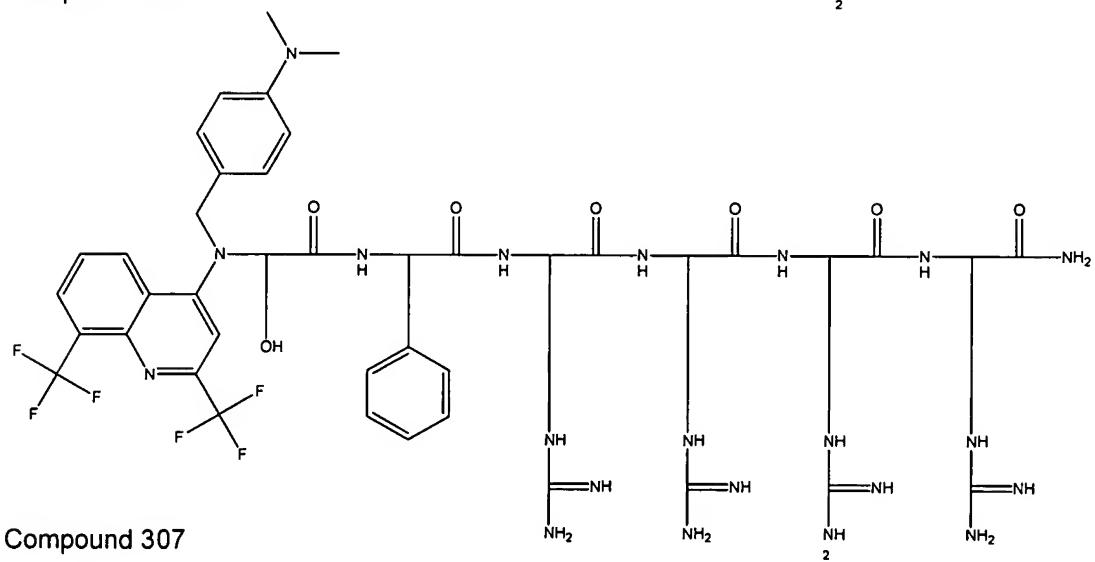


Compound 305

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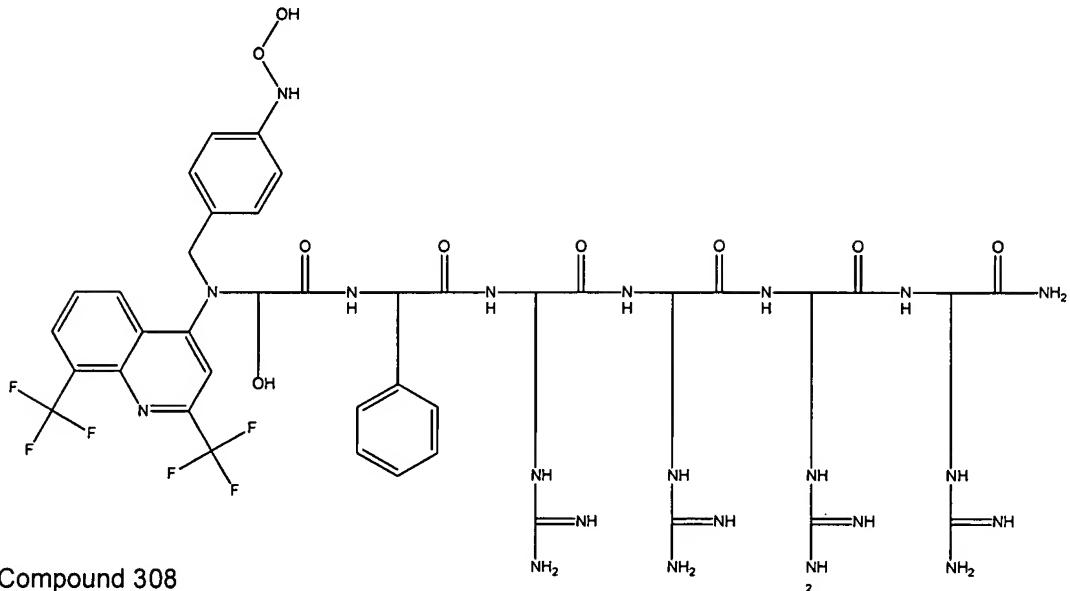


Compound 306

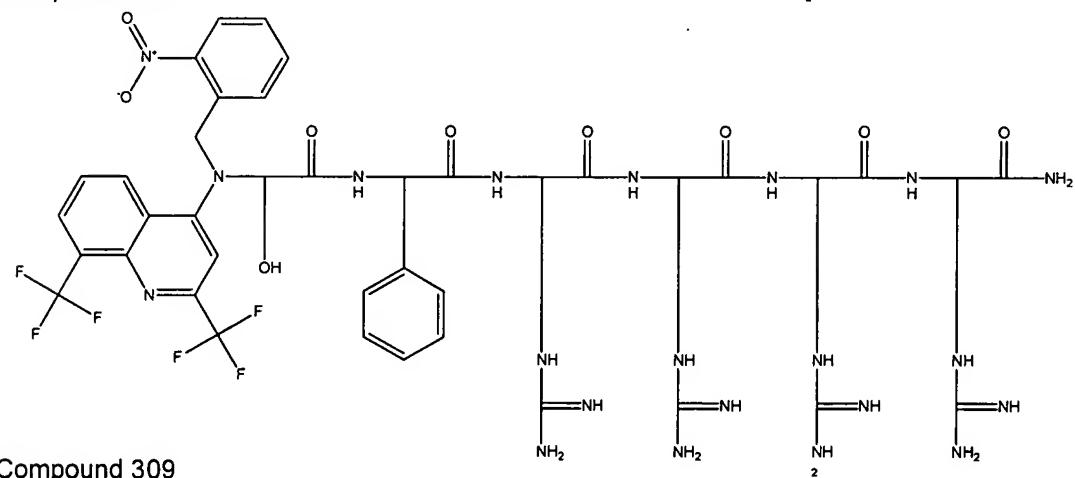


Compound 307

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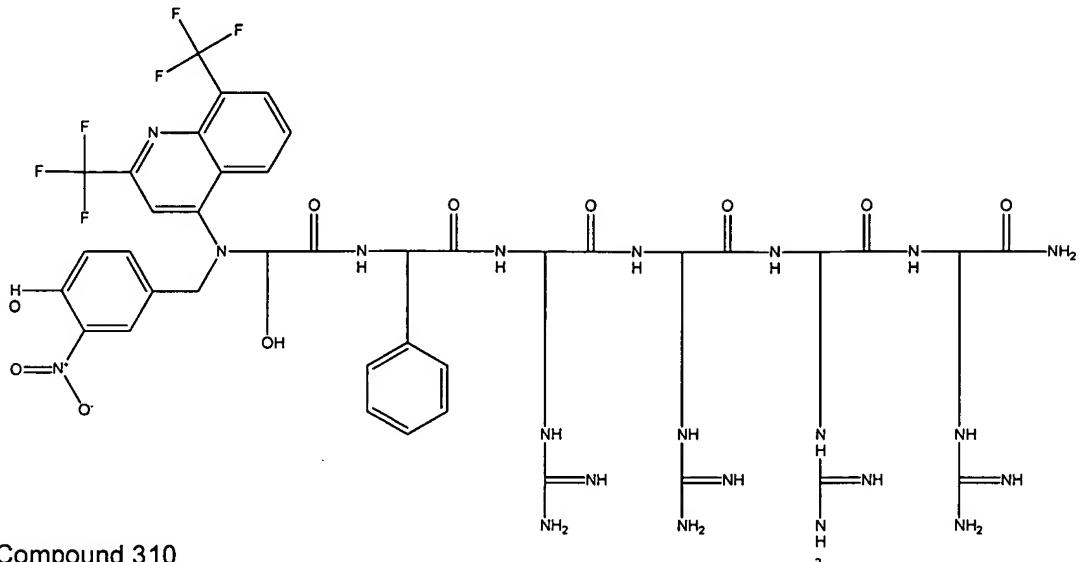


Compound 308

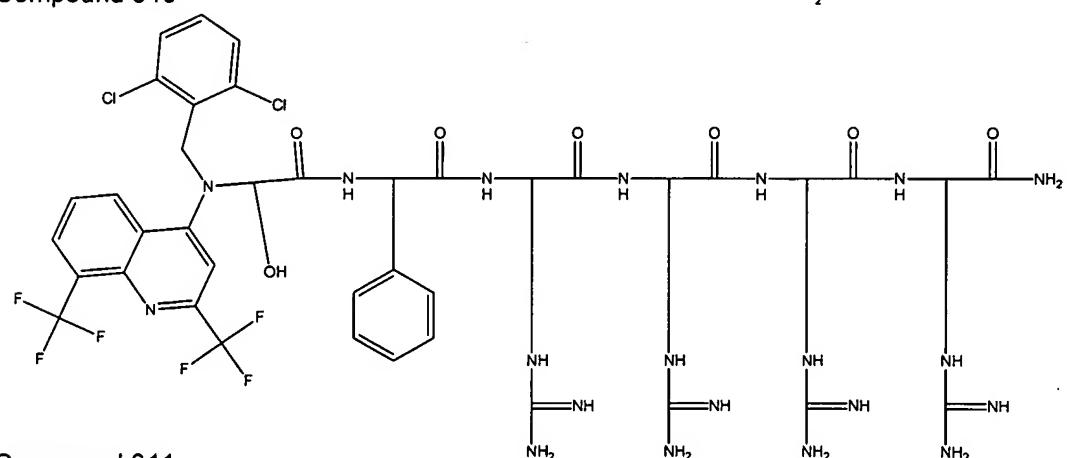


Compound 309

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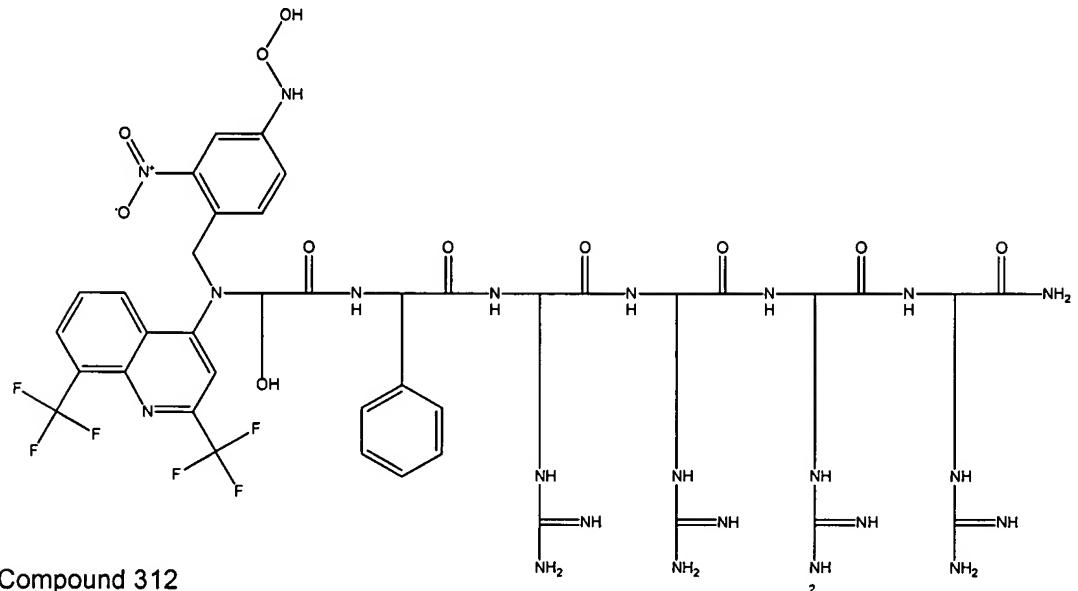


Compound 310

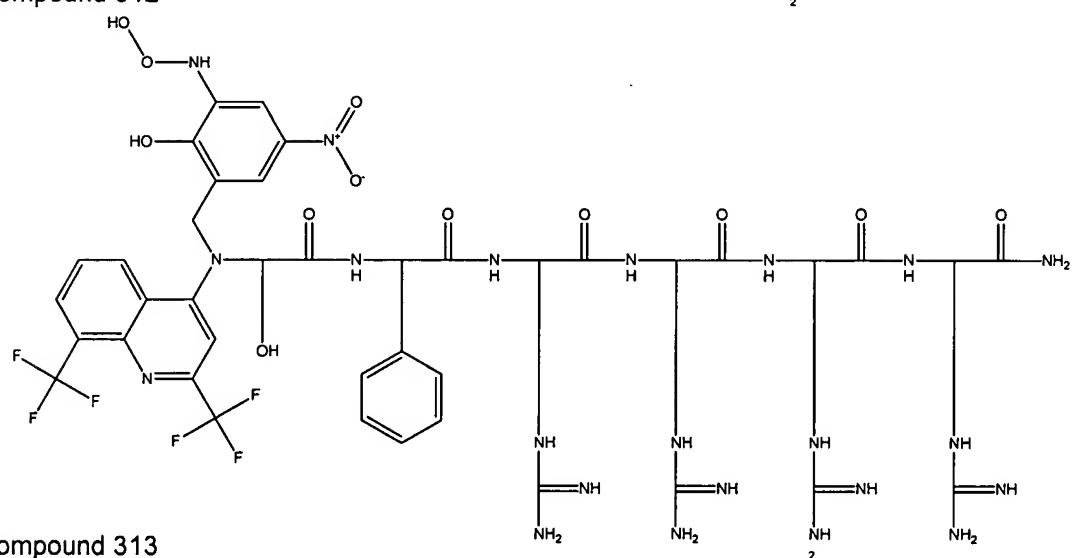


Compound 311

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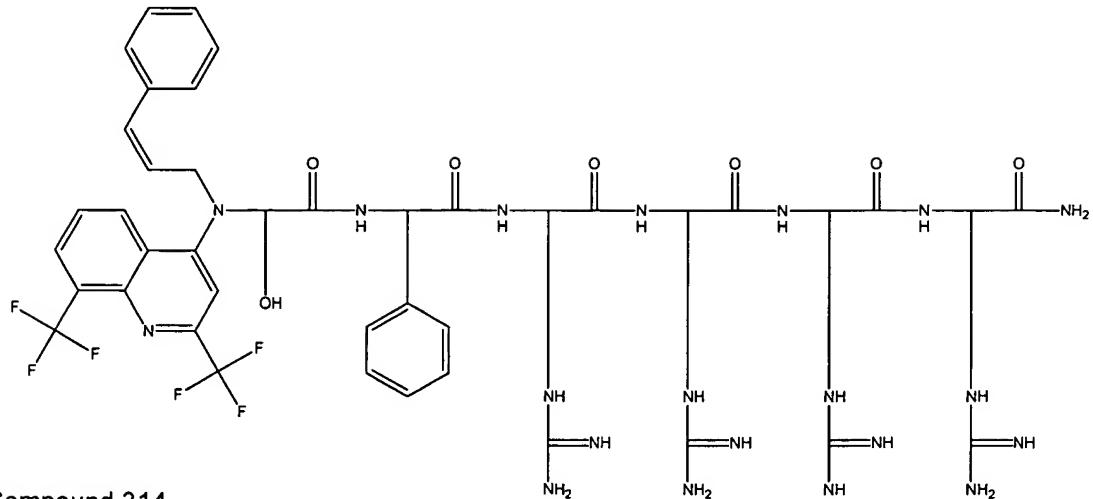


Compound 312

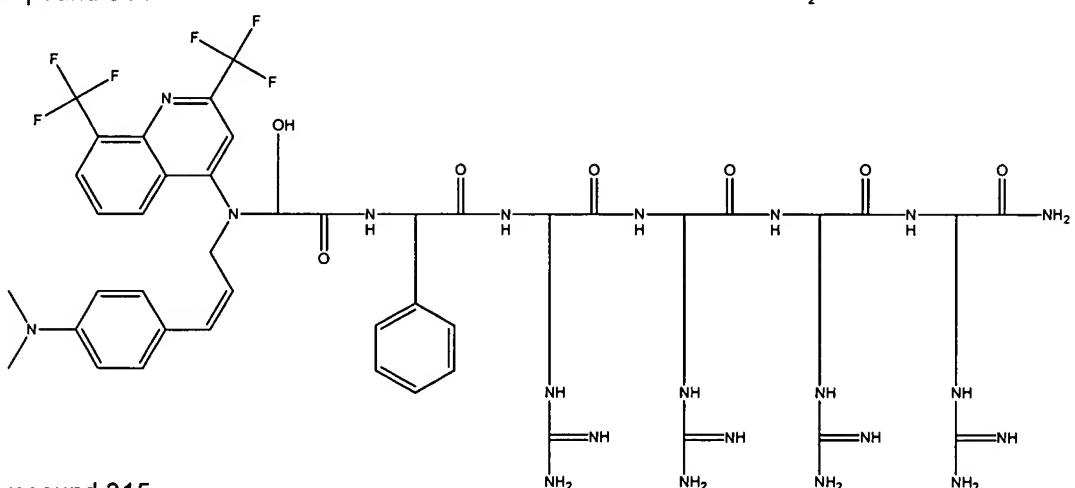


Compound 313

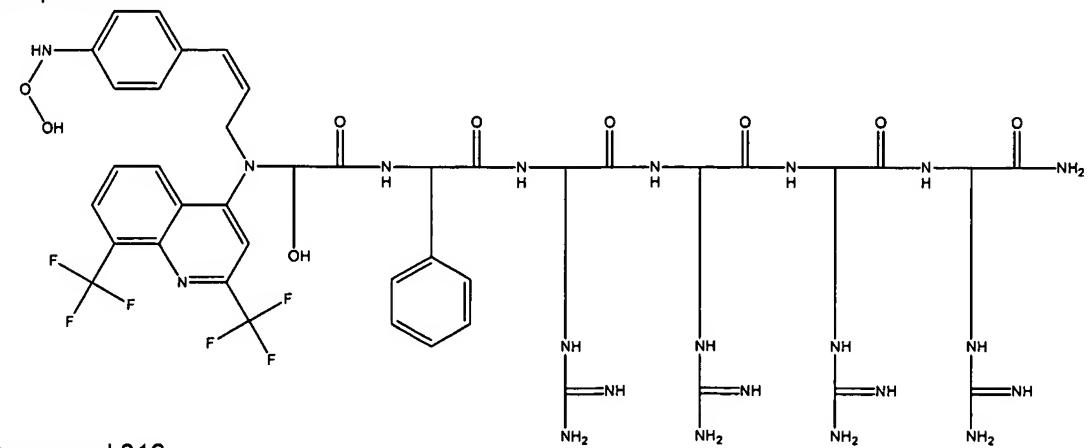
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Compound 314

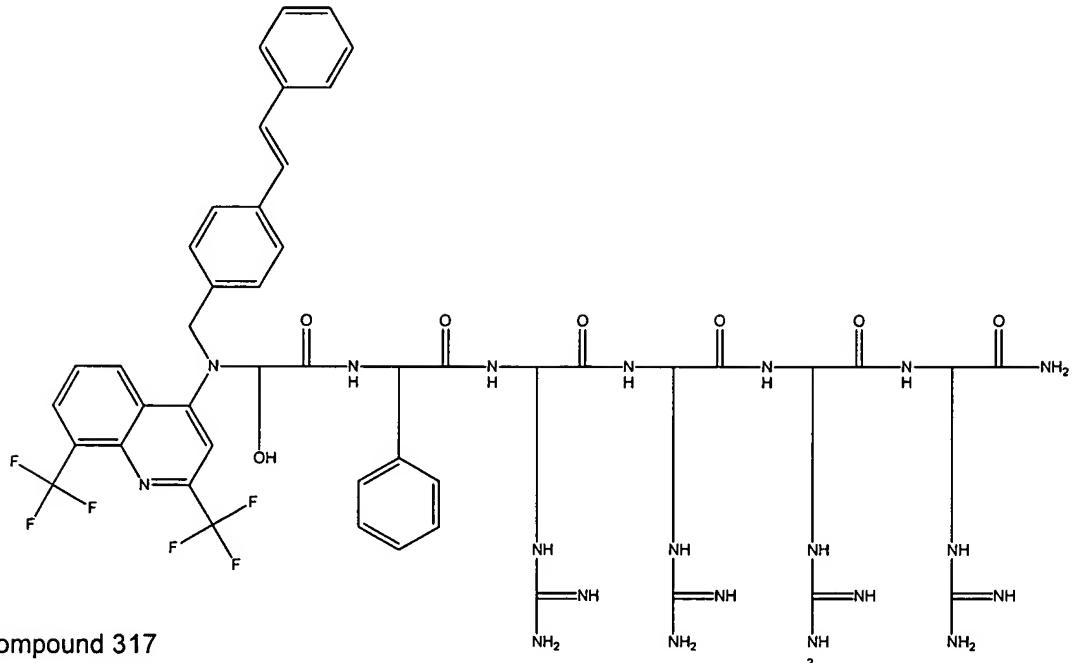


Compound 315

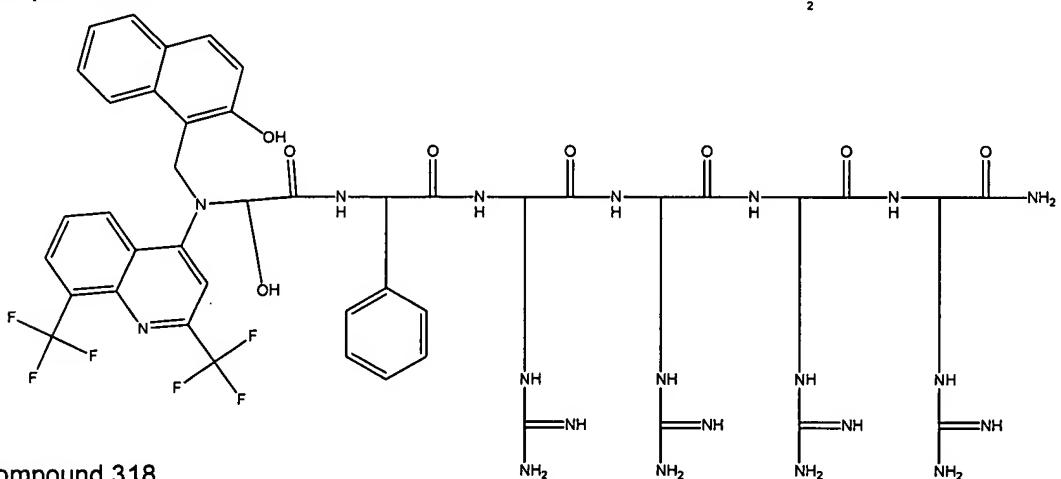


Compound 316

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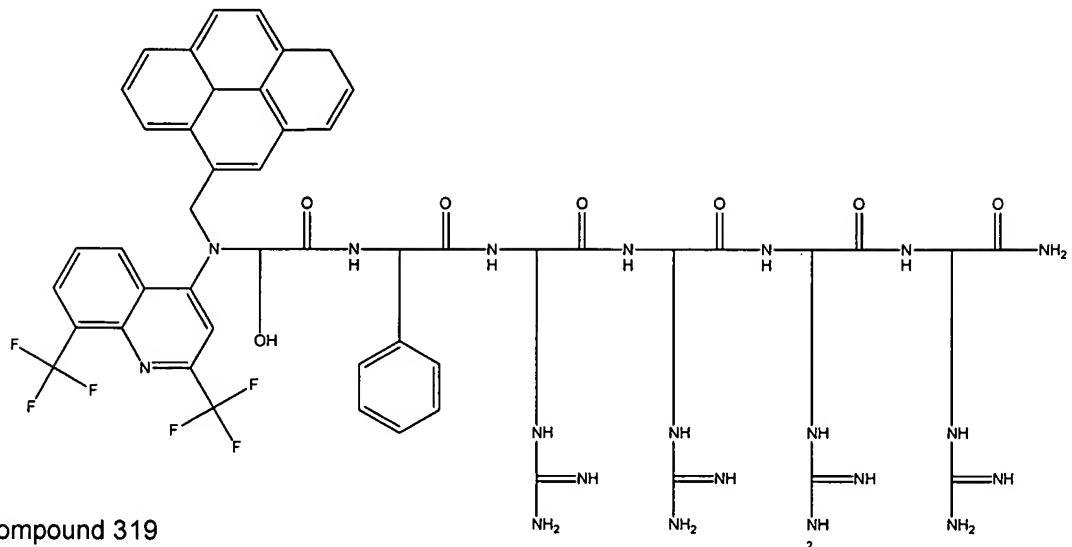


Compound 317

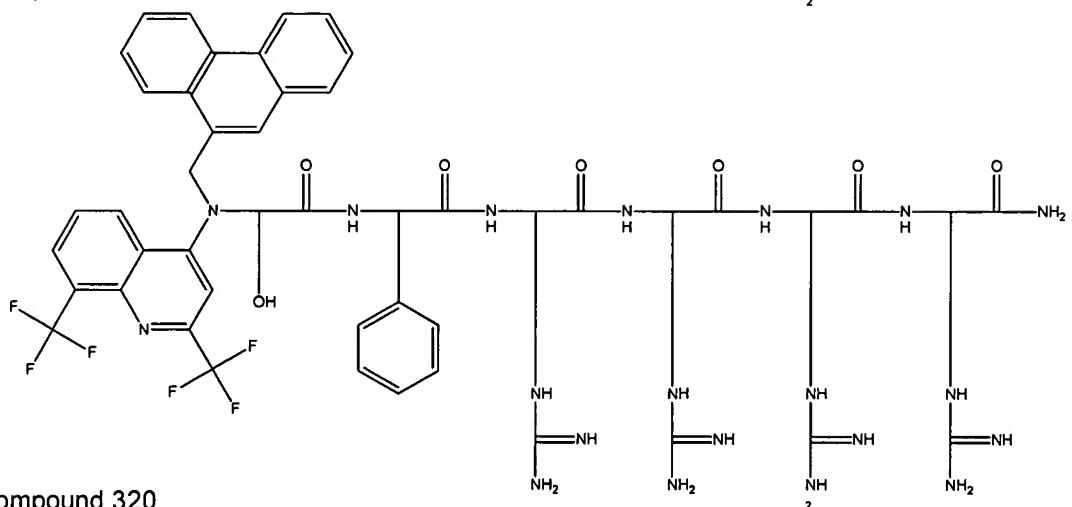


Compound 318

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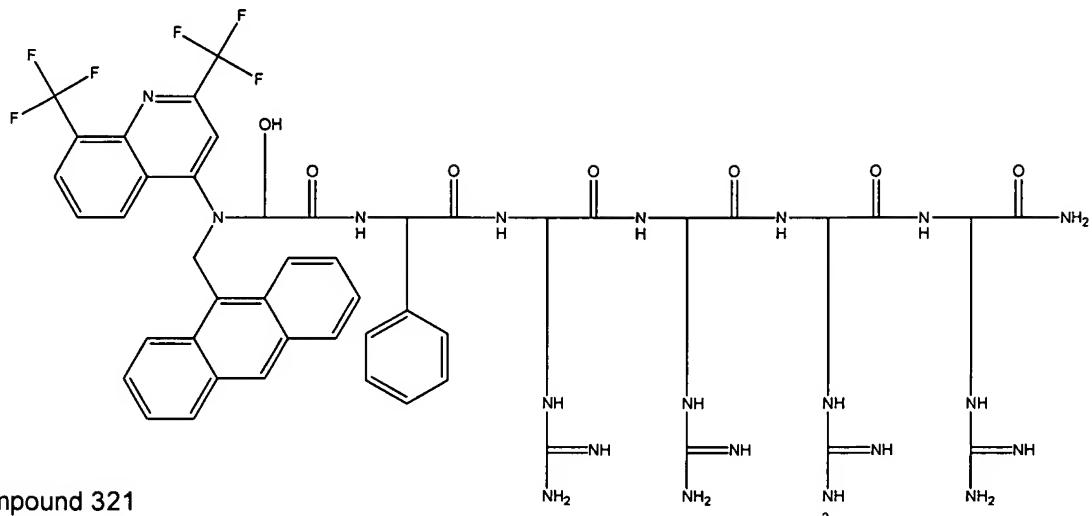


Compound 319

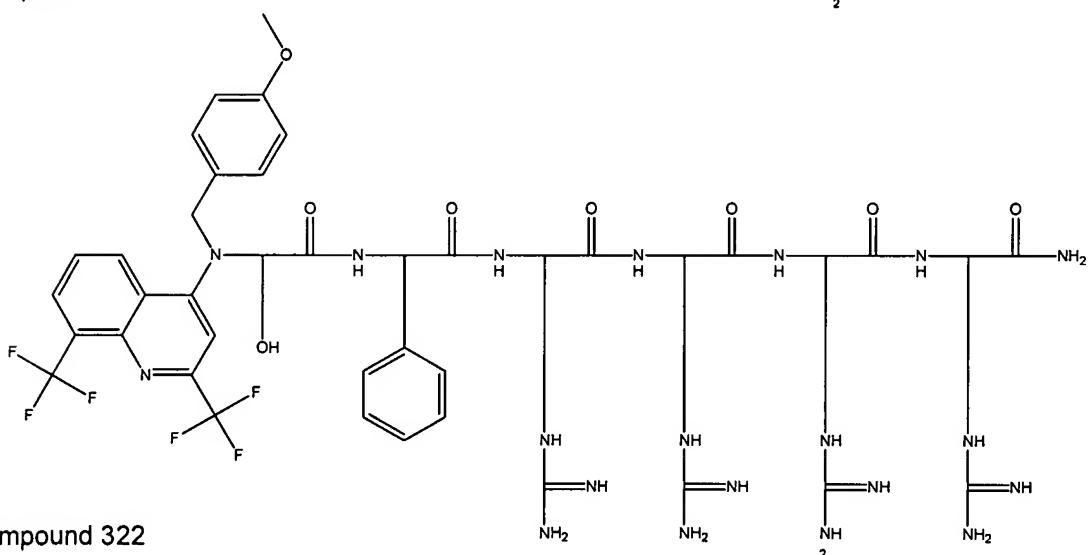


Compound 320

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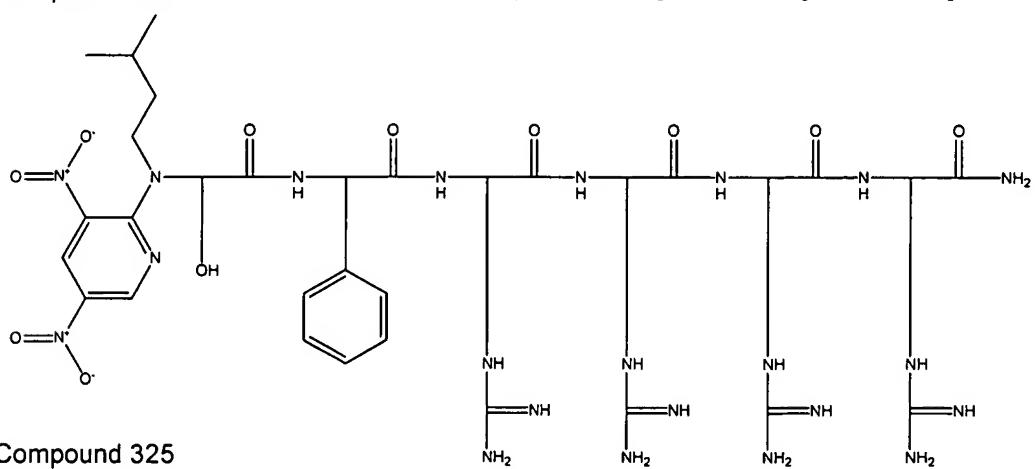
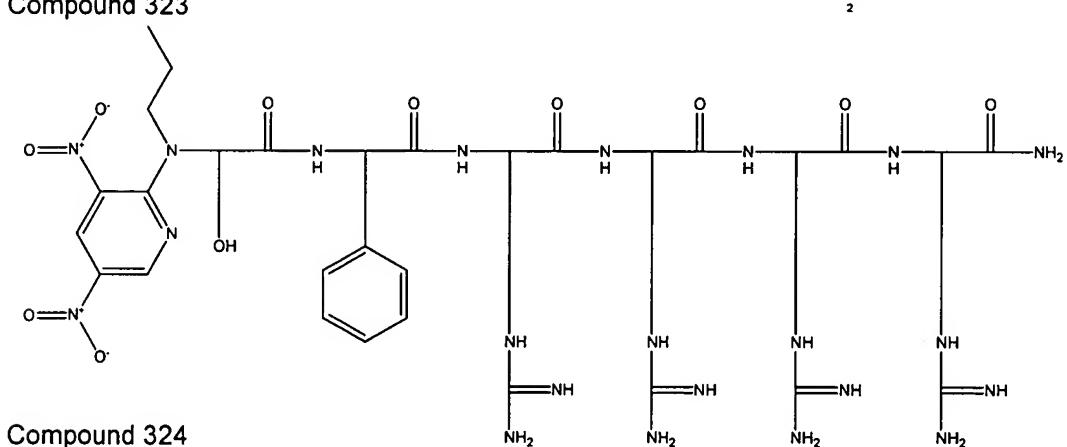
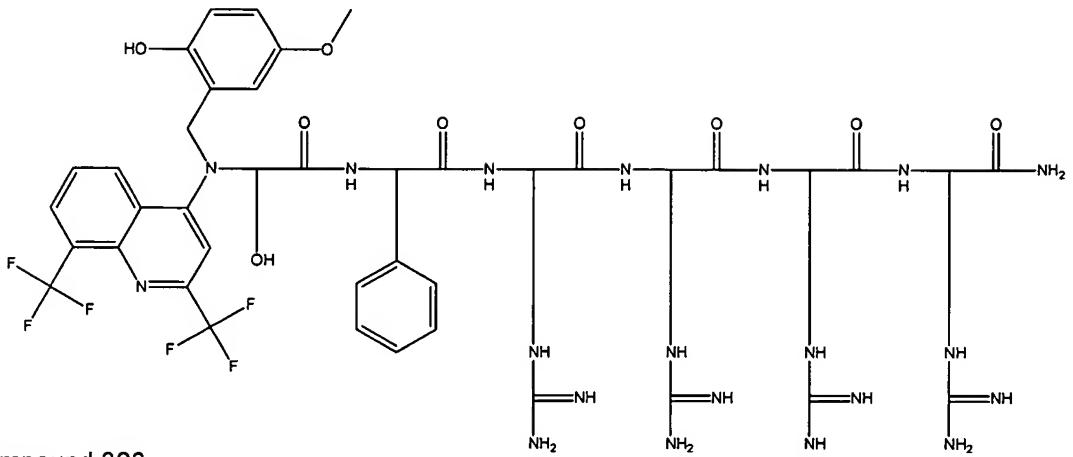


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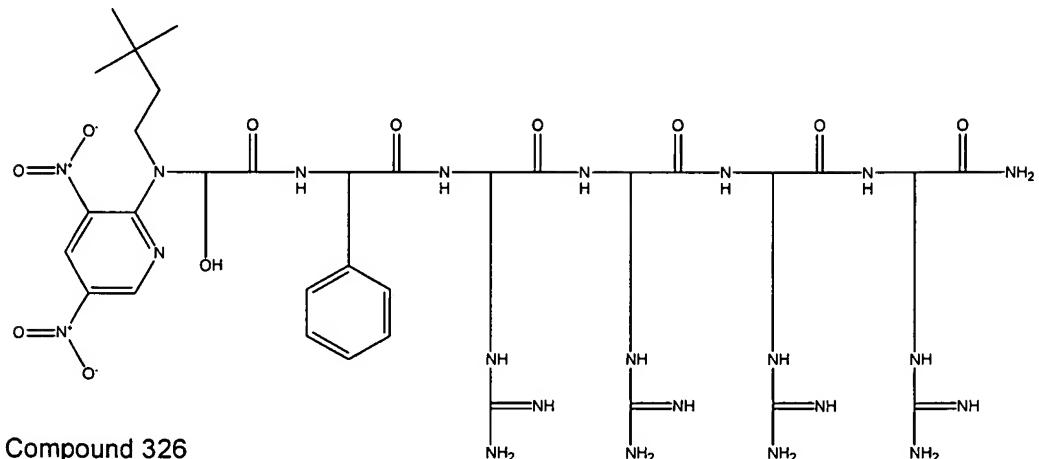


Compound 322

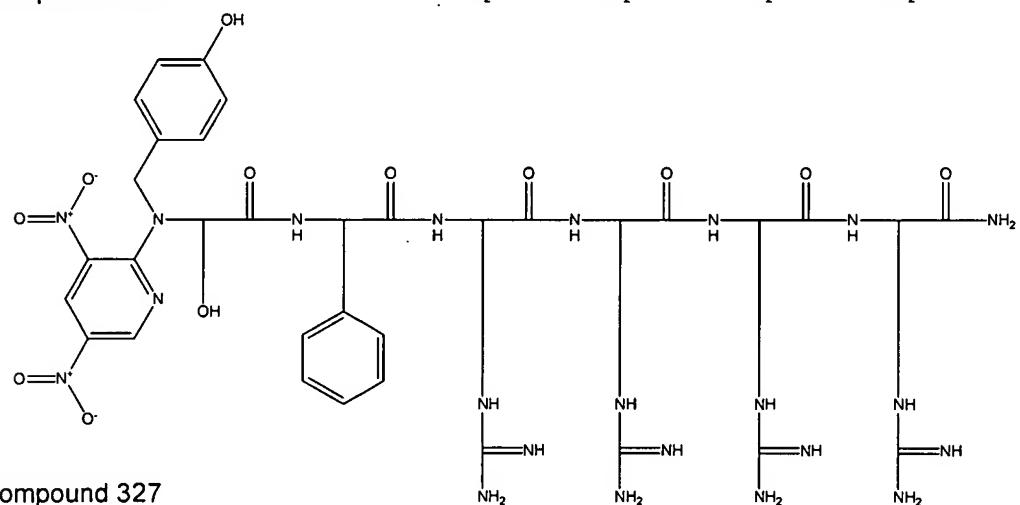
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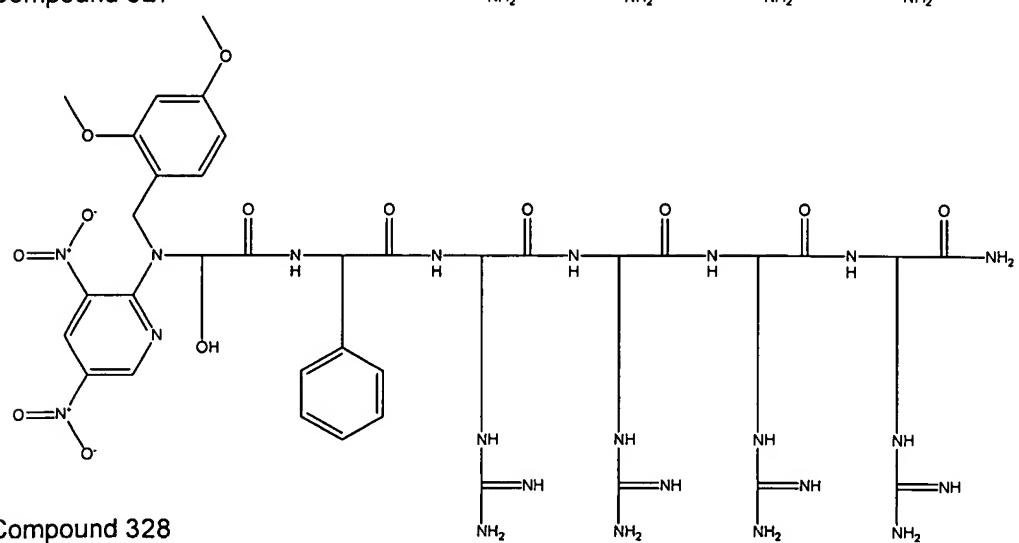
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Compound 326

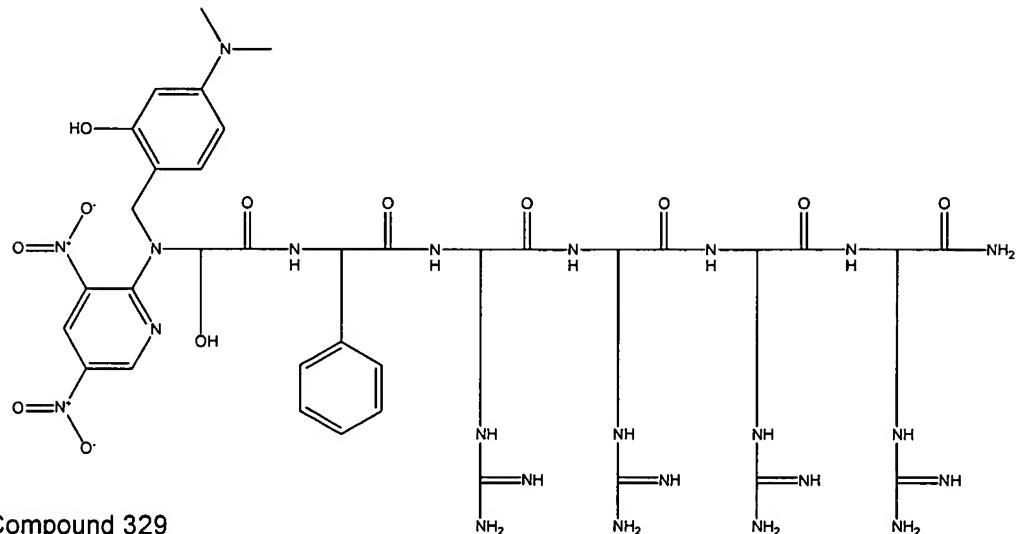


Compound 327

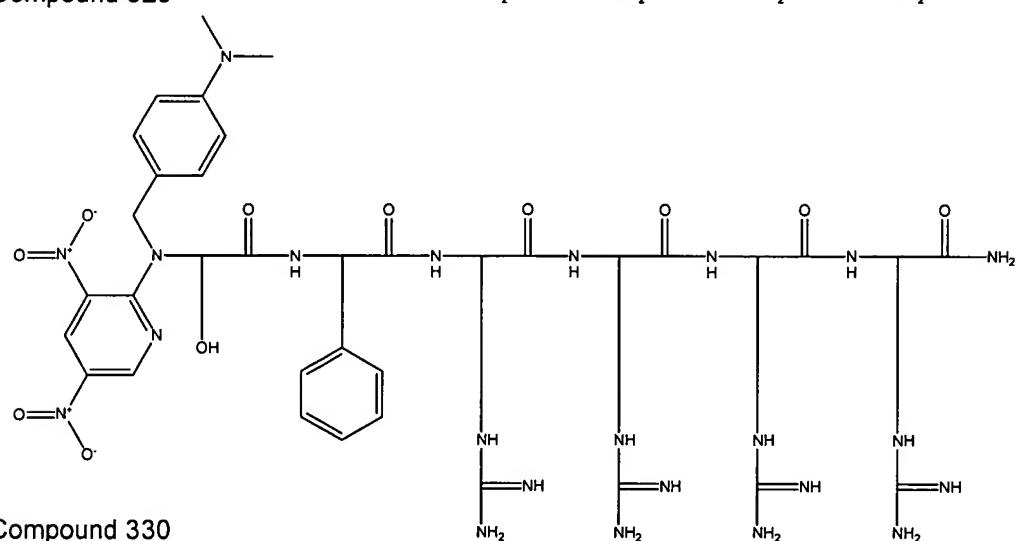


Compound 328

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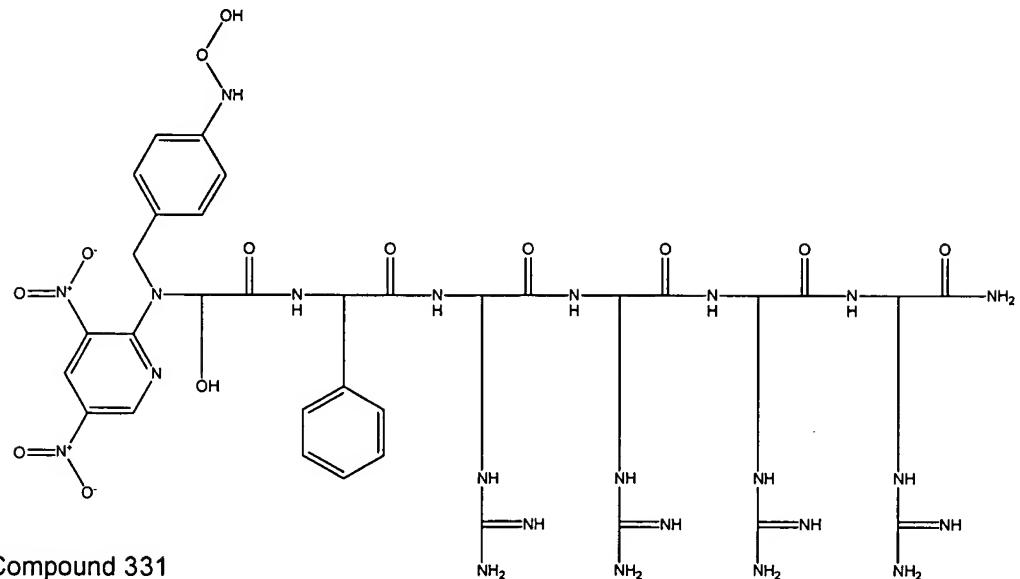


Compound 329

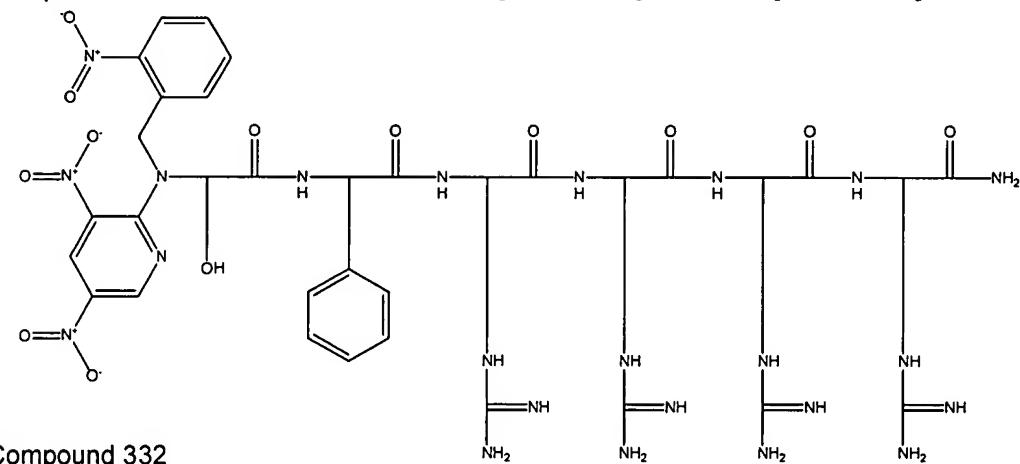


Compound 330

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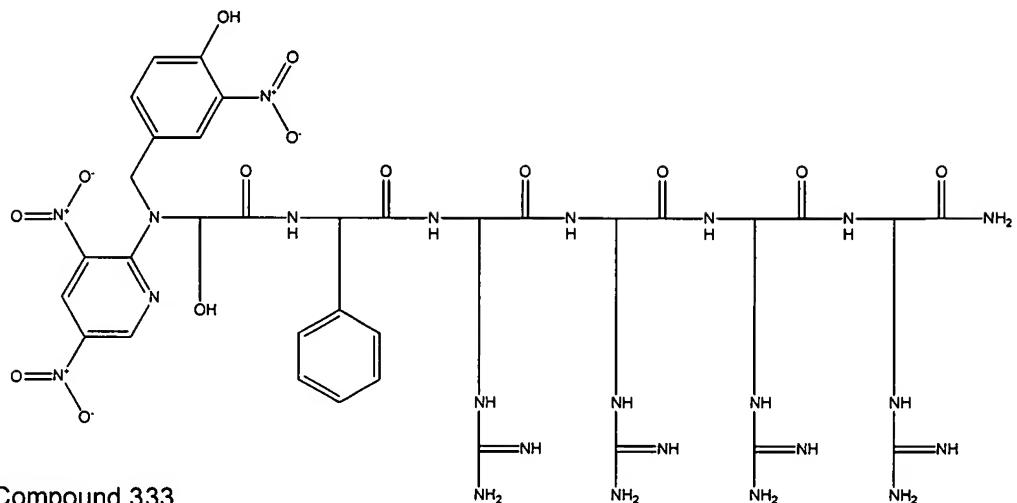


Compound 331

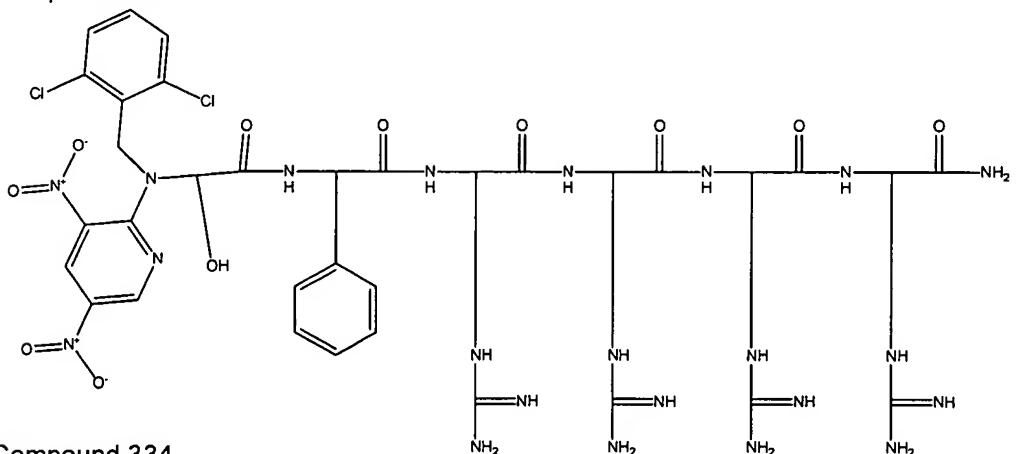


Compound 332

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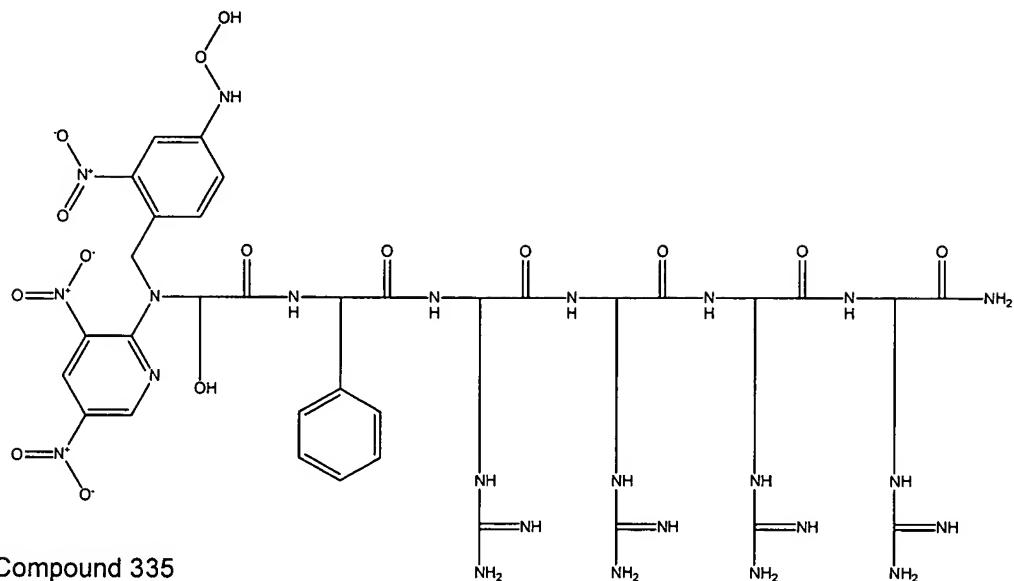


Compound 333

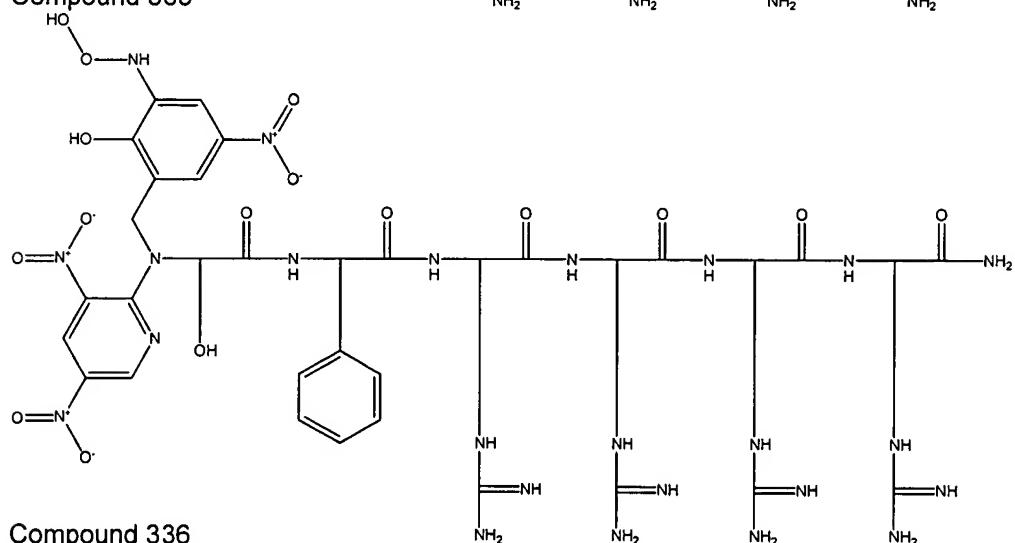


Compound 334

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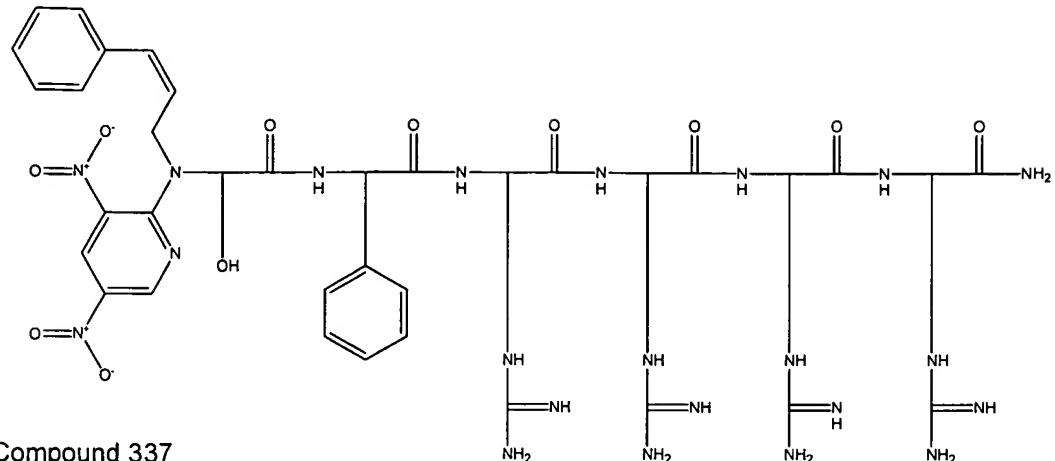


Compound 335

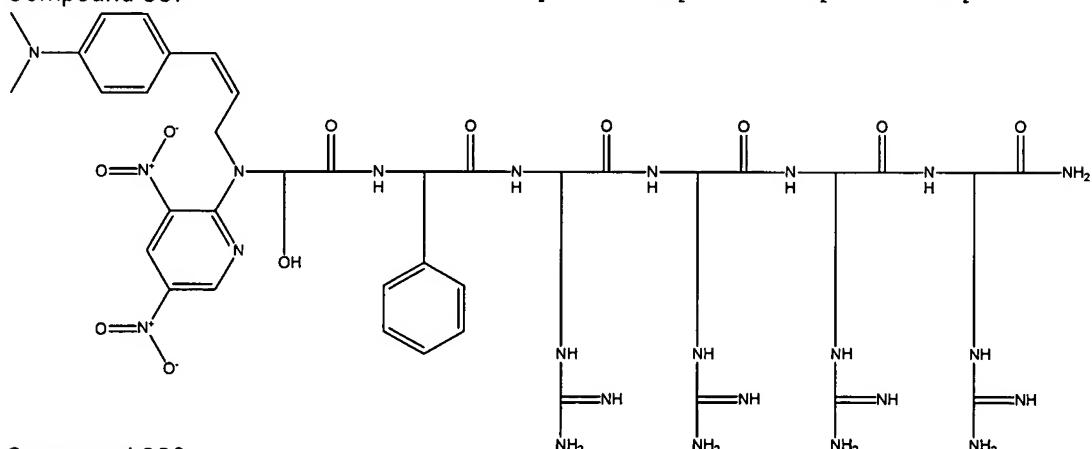


Compound 336

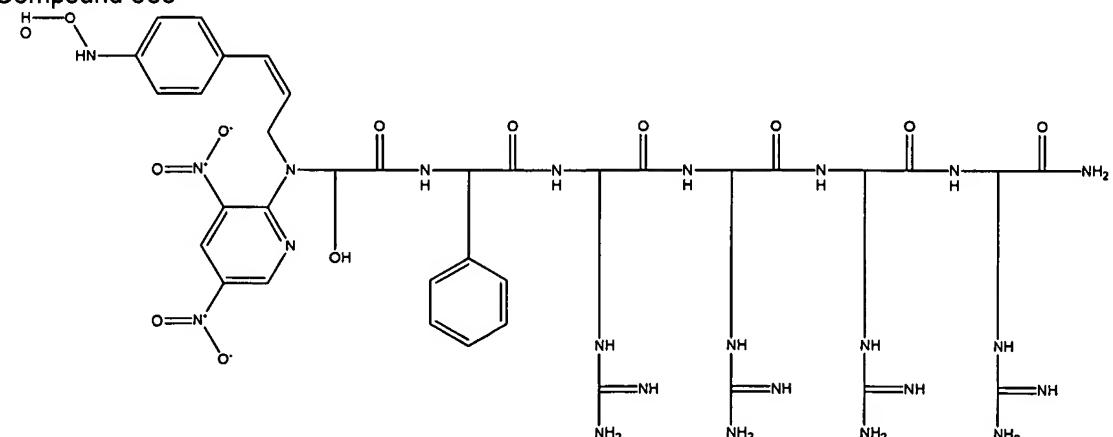
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Compound 337

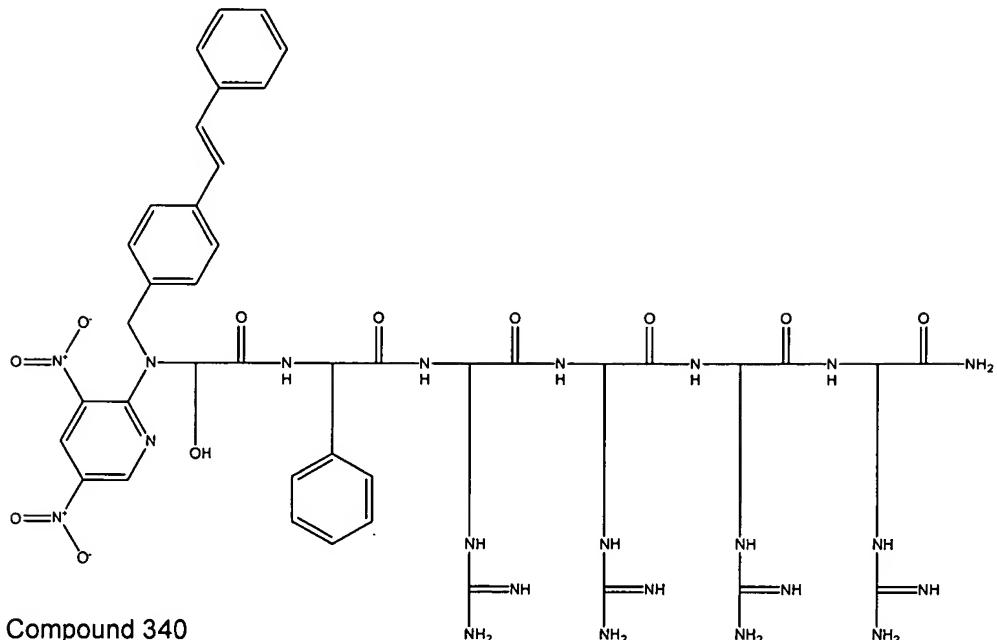


Compound 338

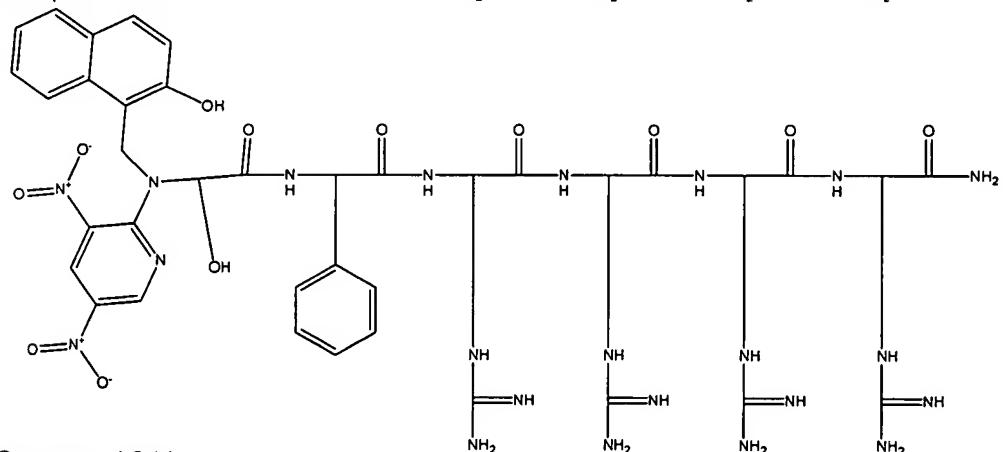


Compound 339

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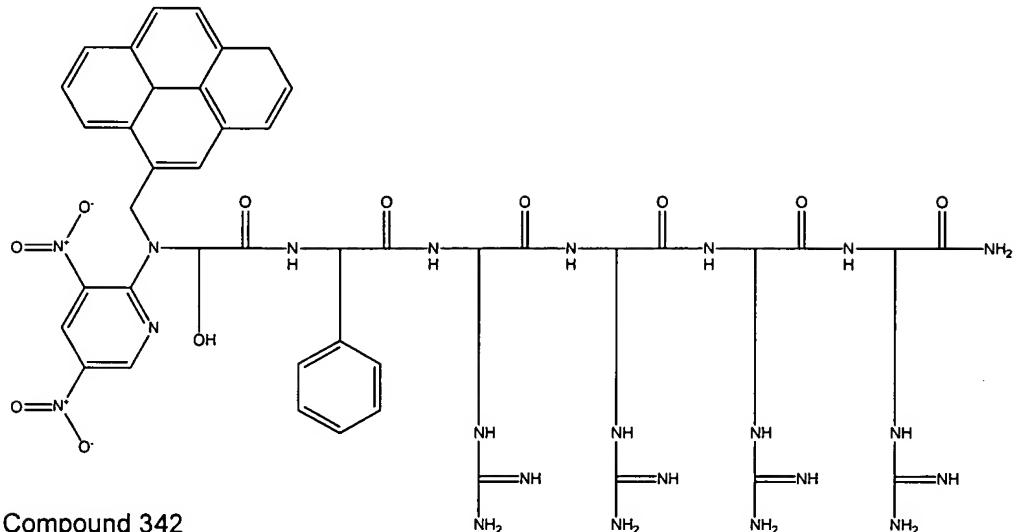


Compound 340

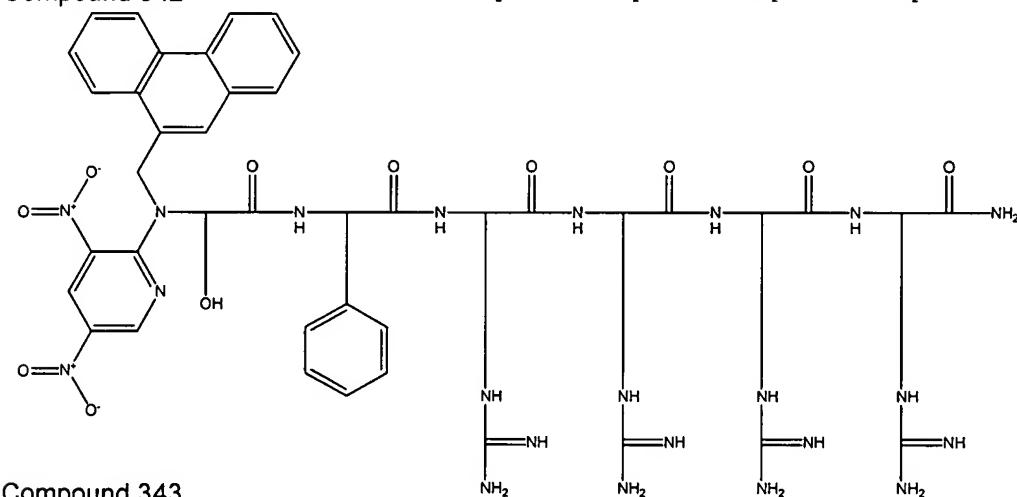


Compound 341

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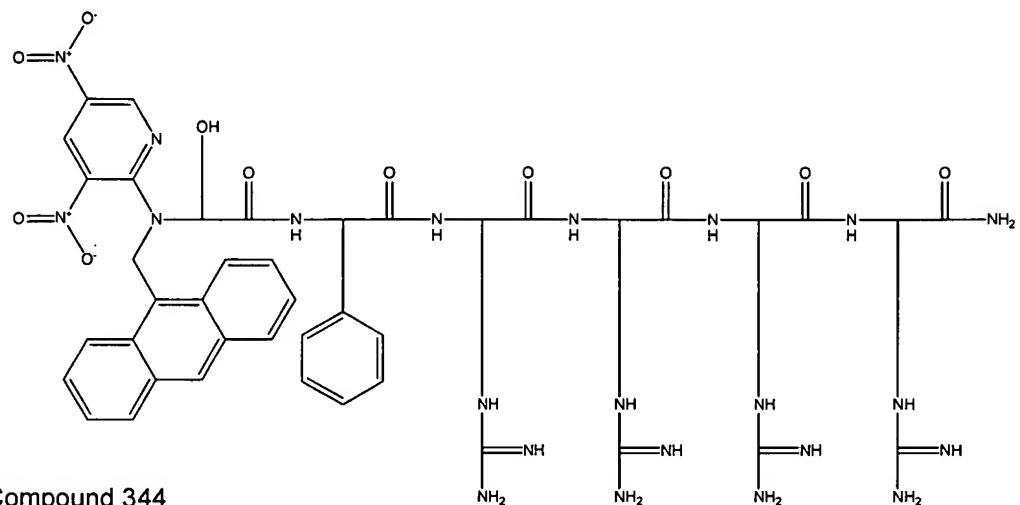


Compound 342

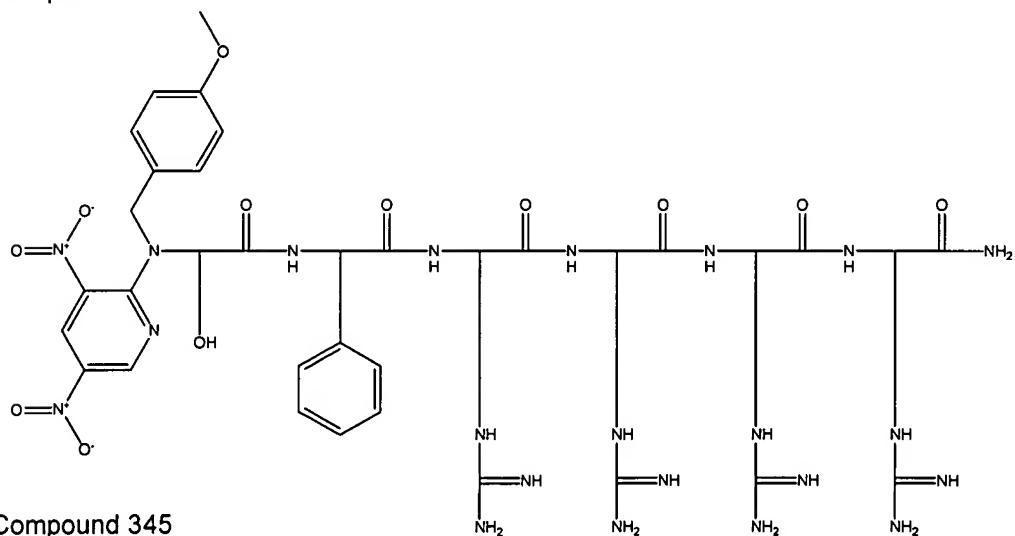


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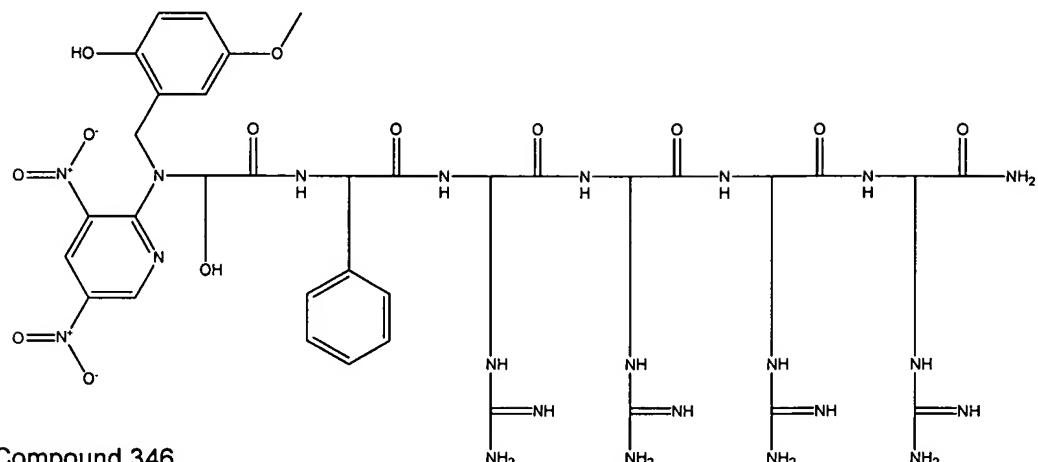


Compound 344

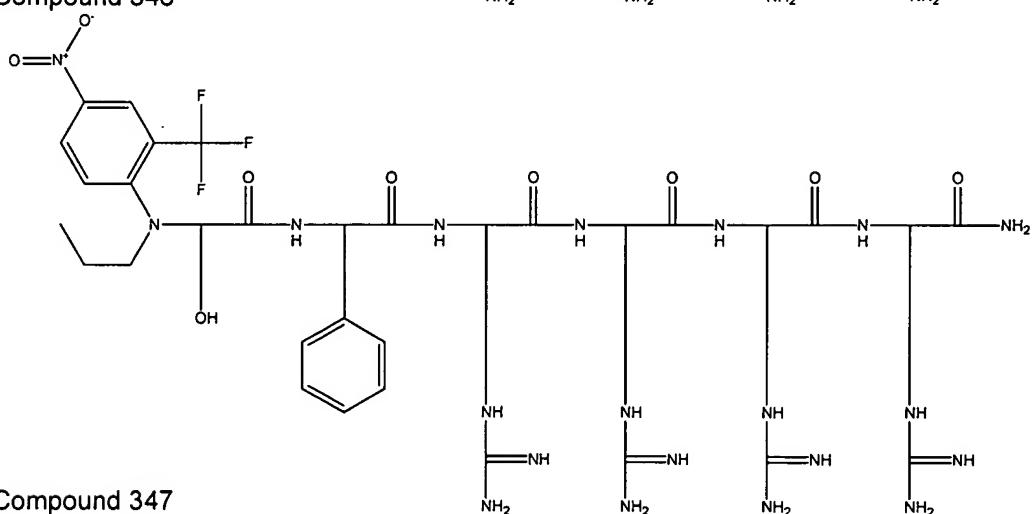


Compound 345

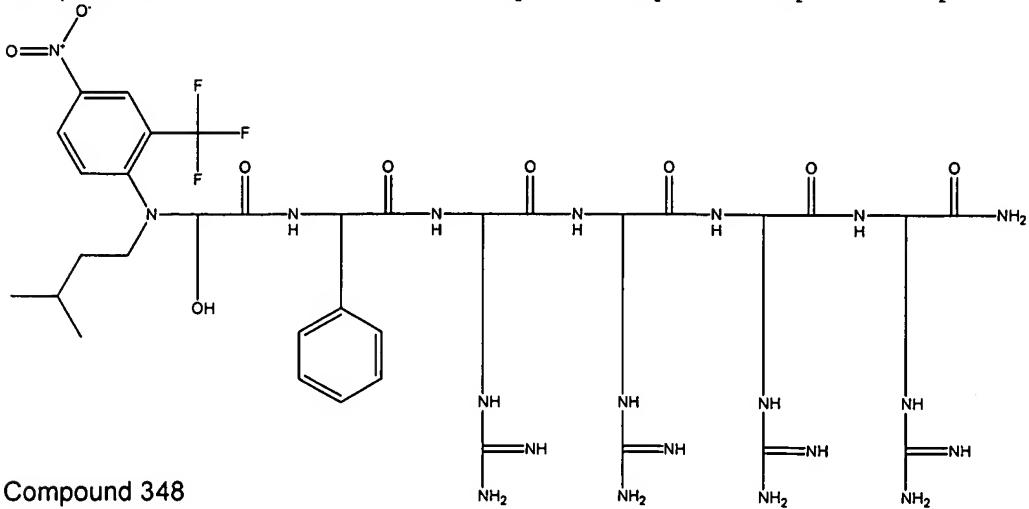
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Compound 346

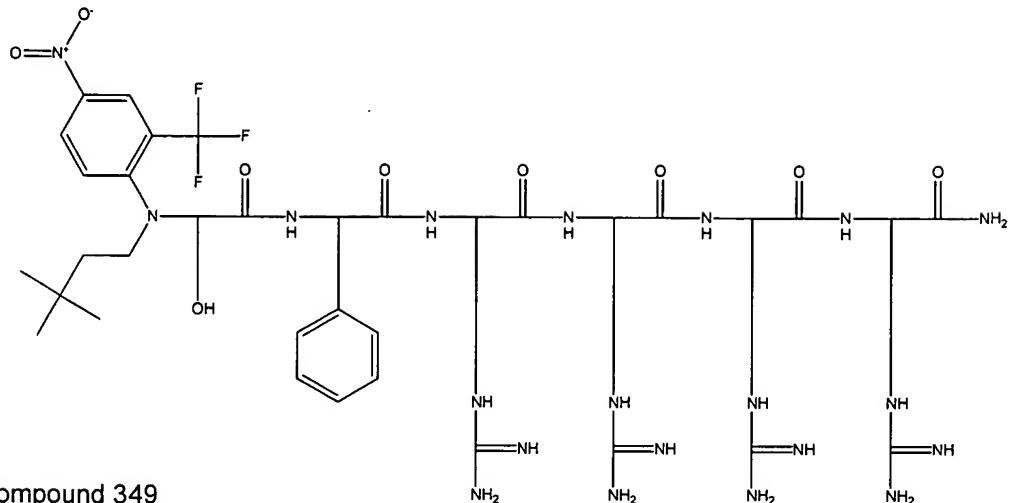


Compound 347

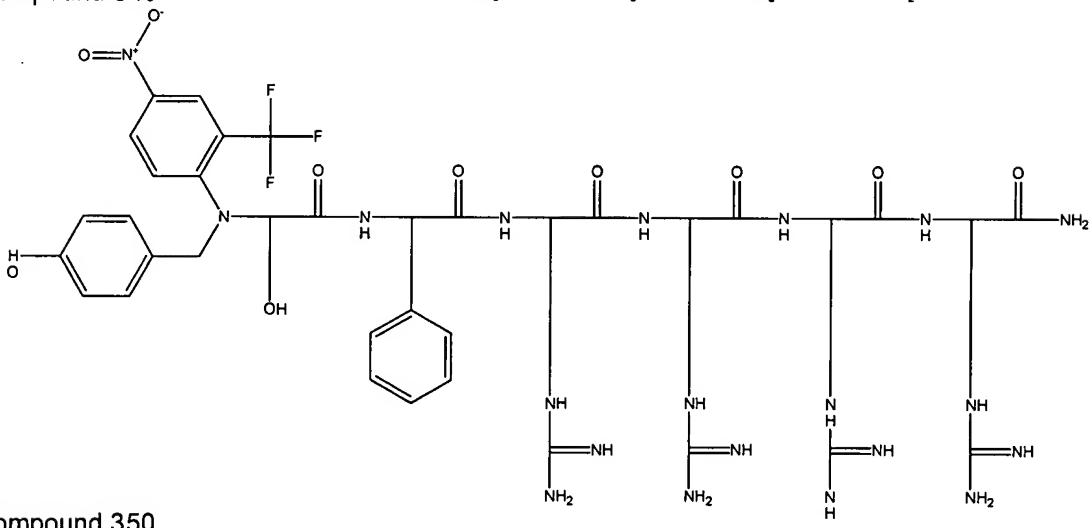


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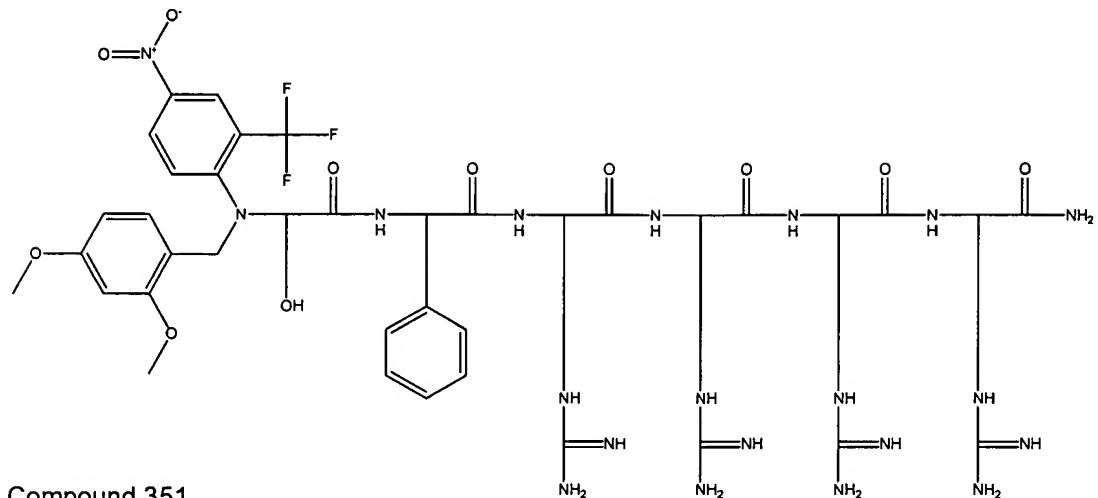


Compound 349

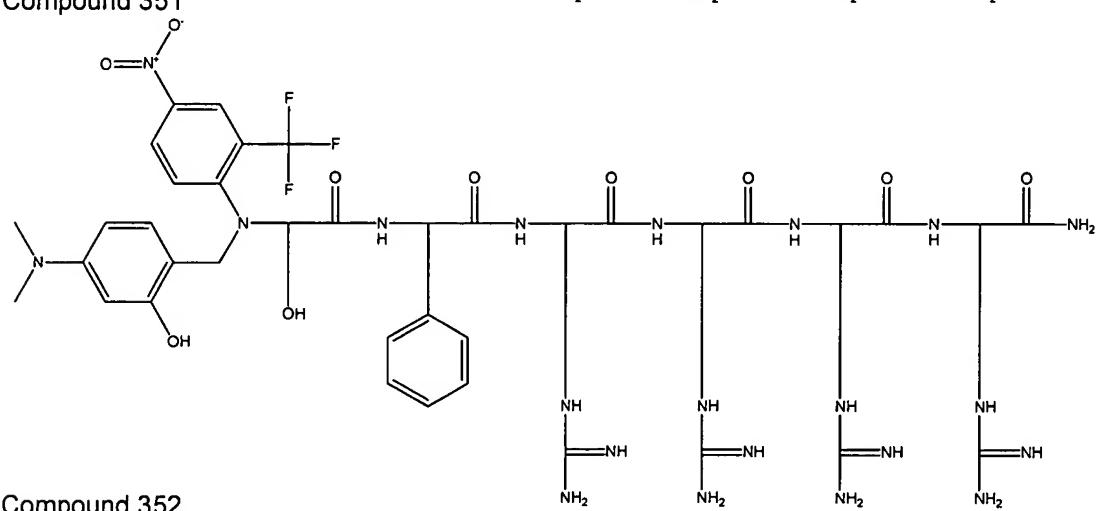


Compound 350

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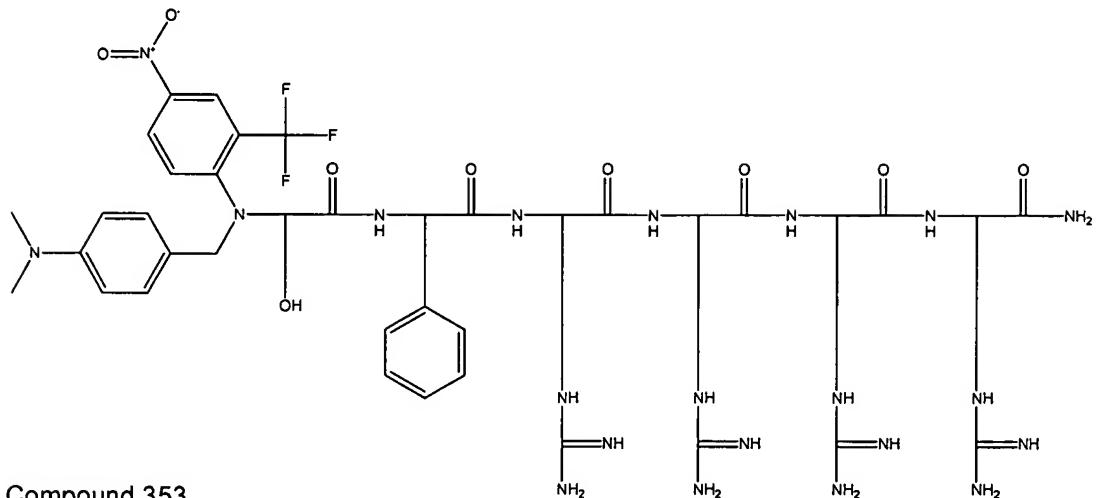


Compound 351

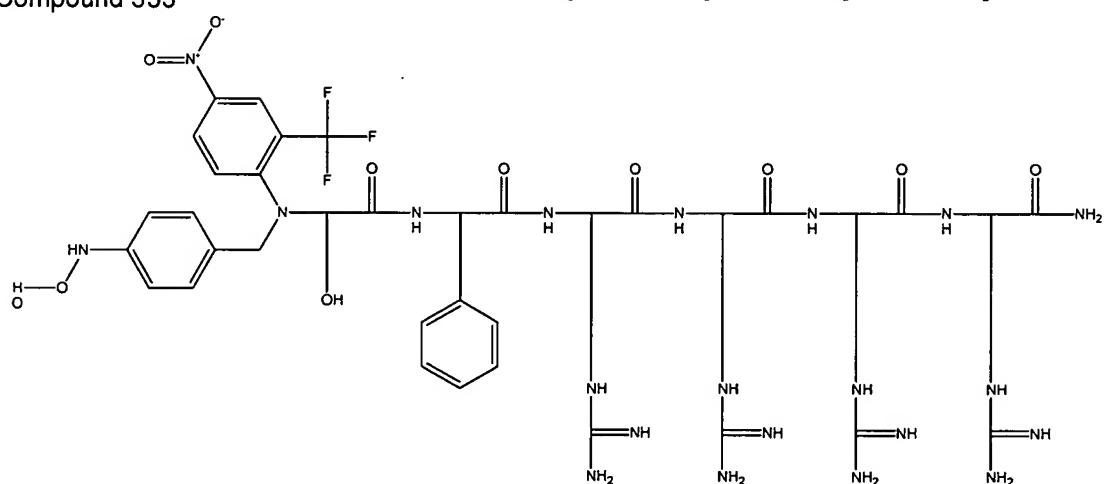


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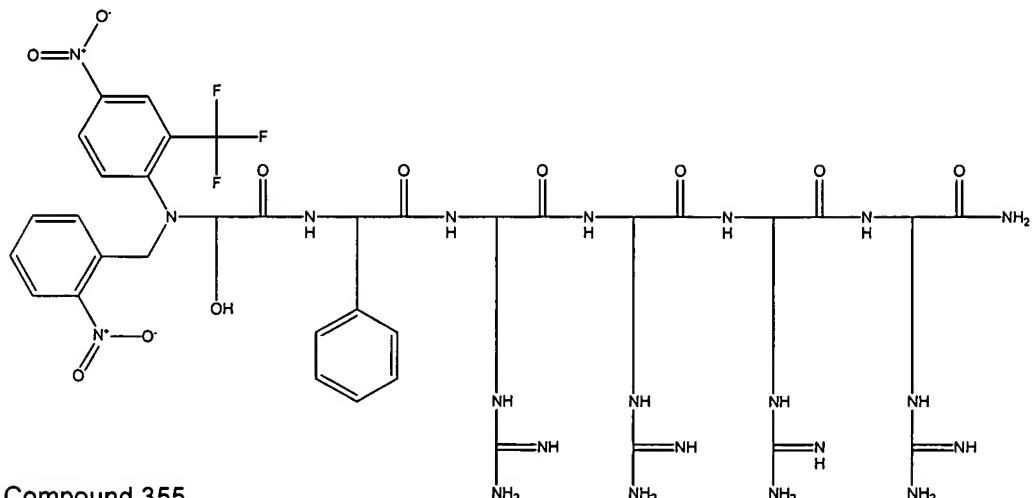


Compound 353

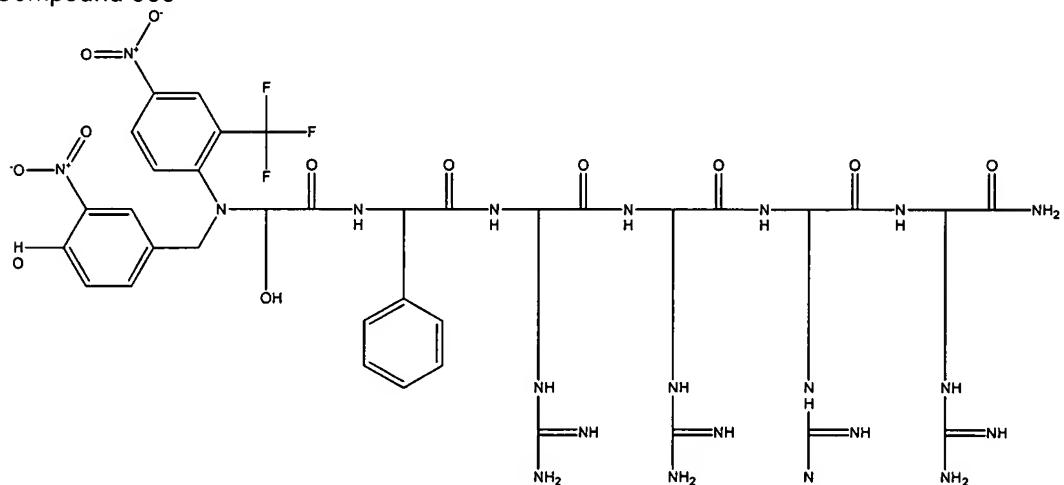


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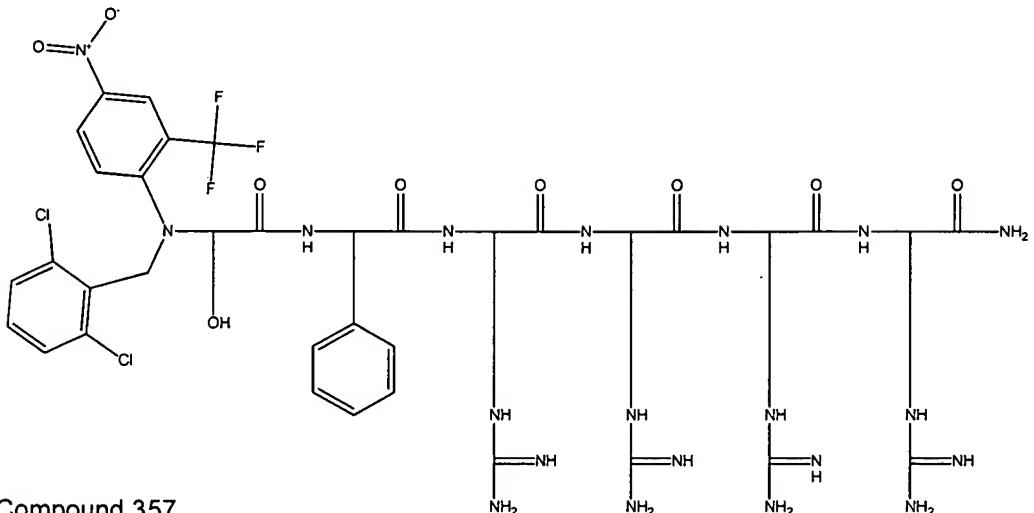


Compound 355

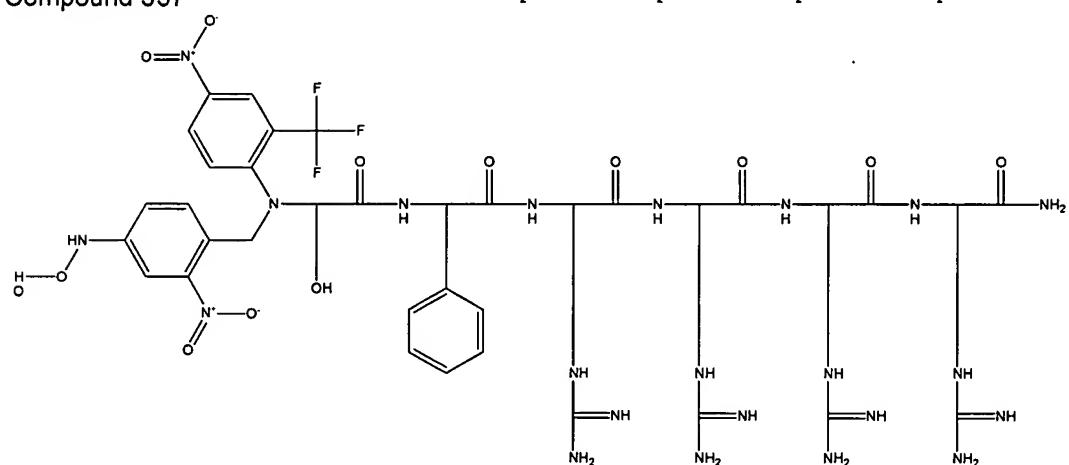


Compound 356

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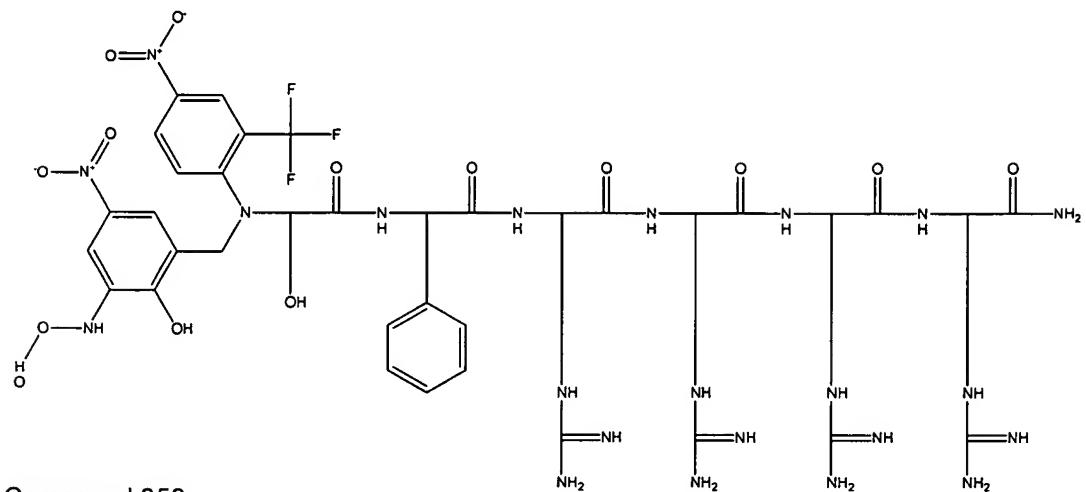


Compound 357

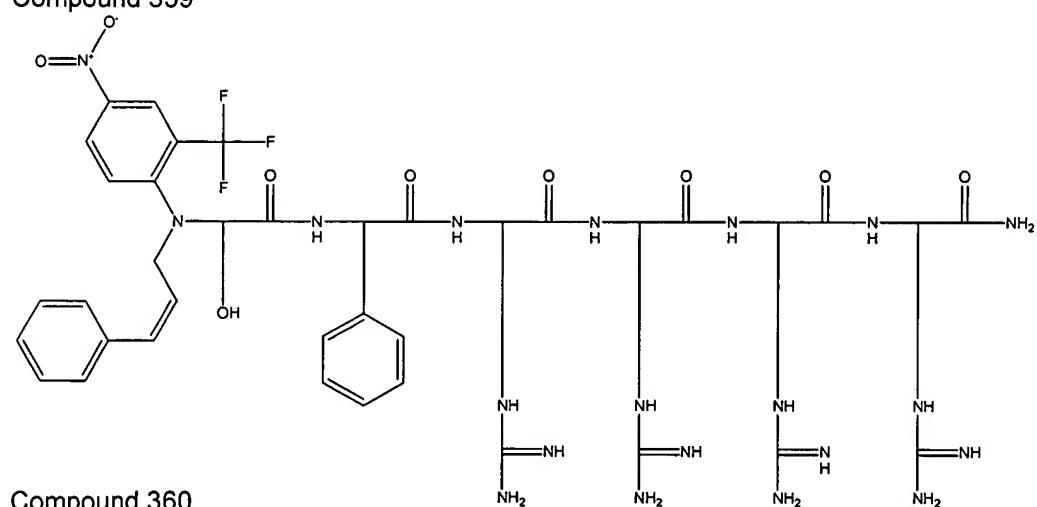


Compound 358

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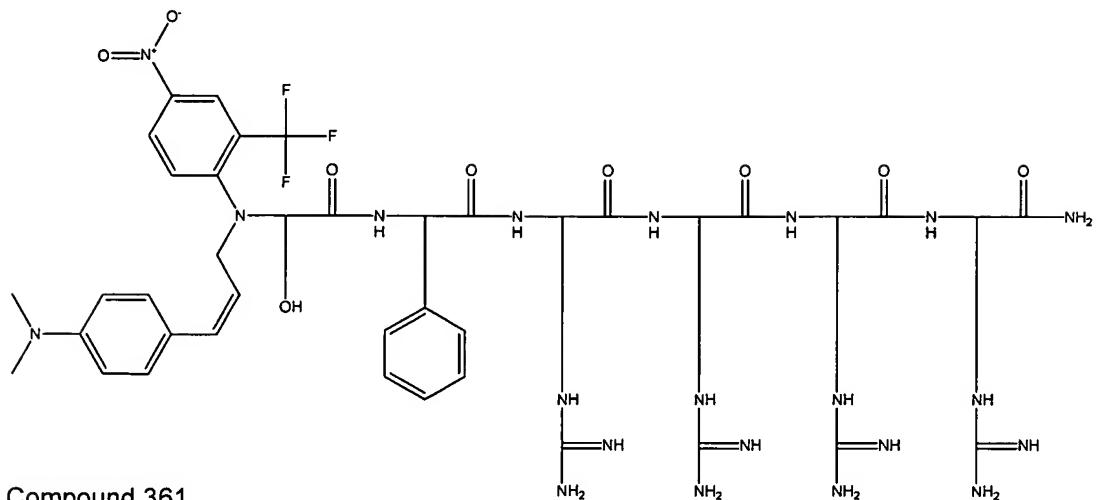


Compound 359

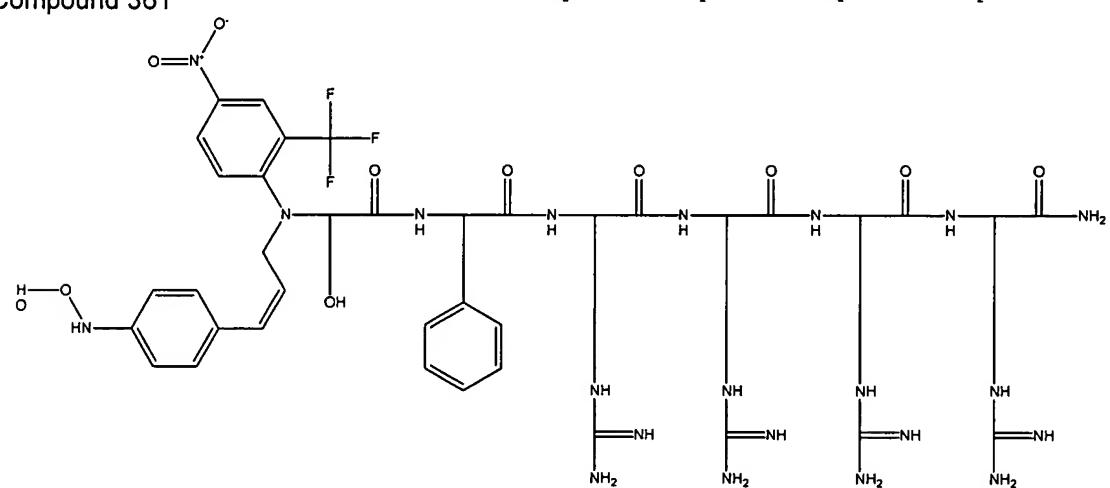


Compound 360

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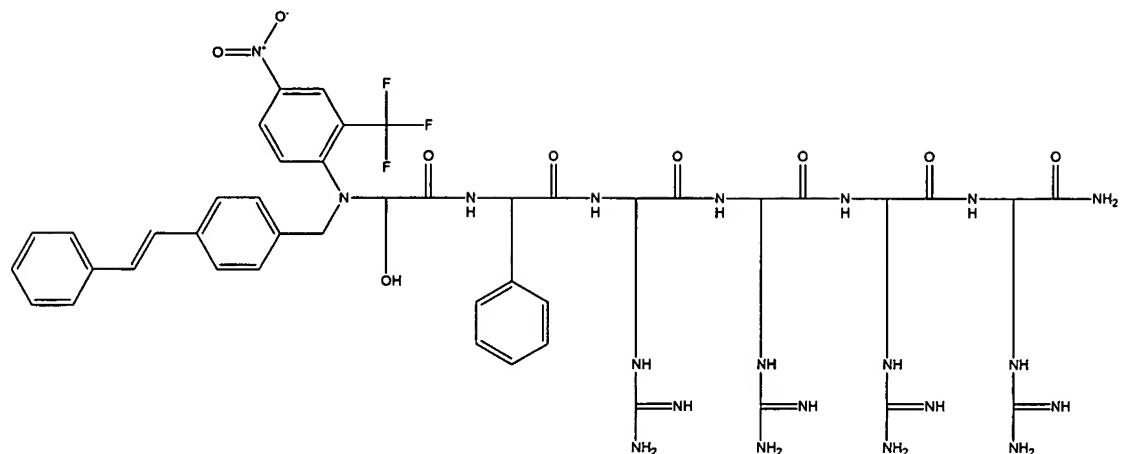


Compound 361

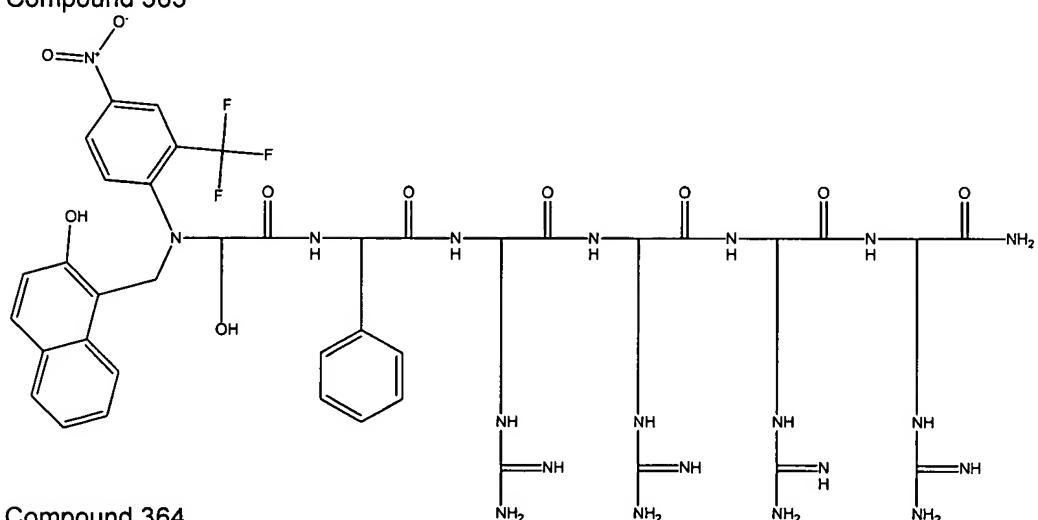


Compound 362

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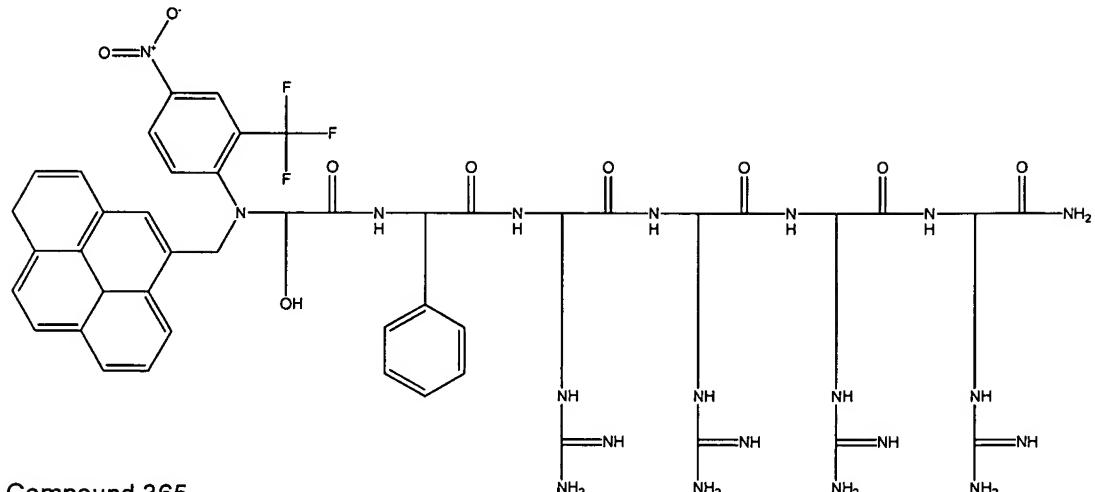


Compound 363

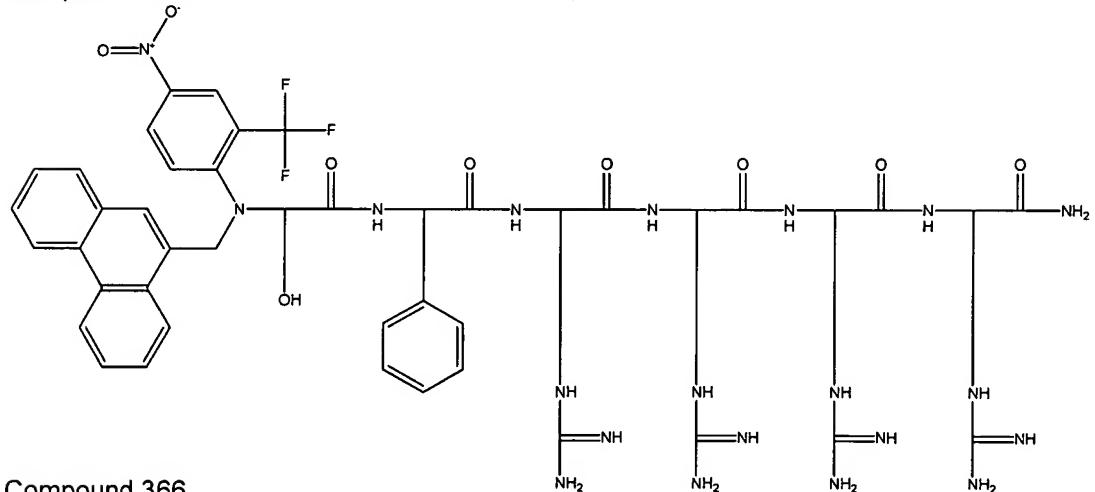


Compound 364

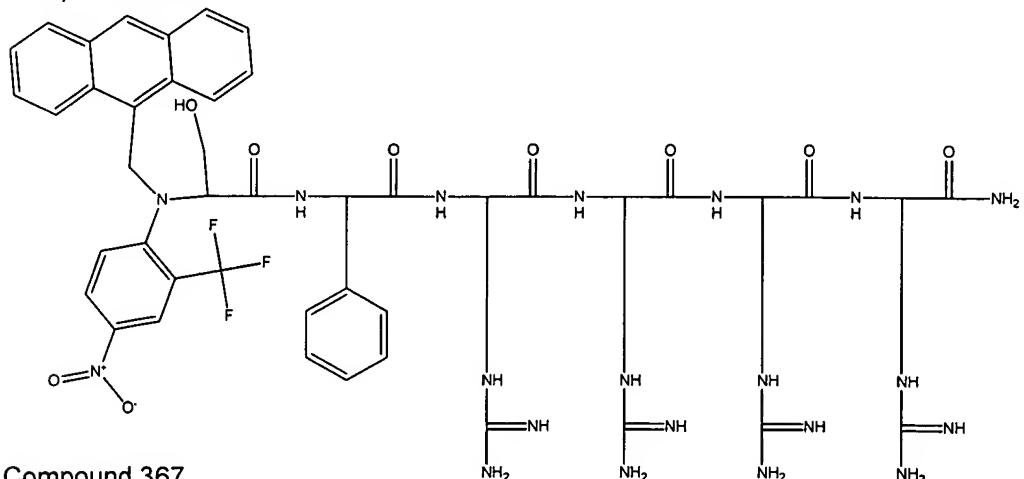
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Compound 365

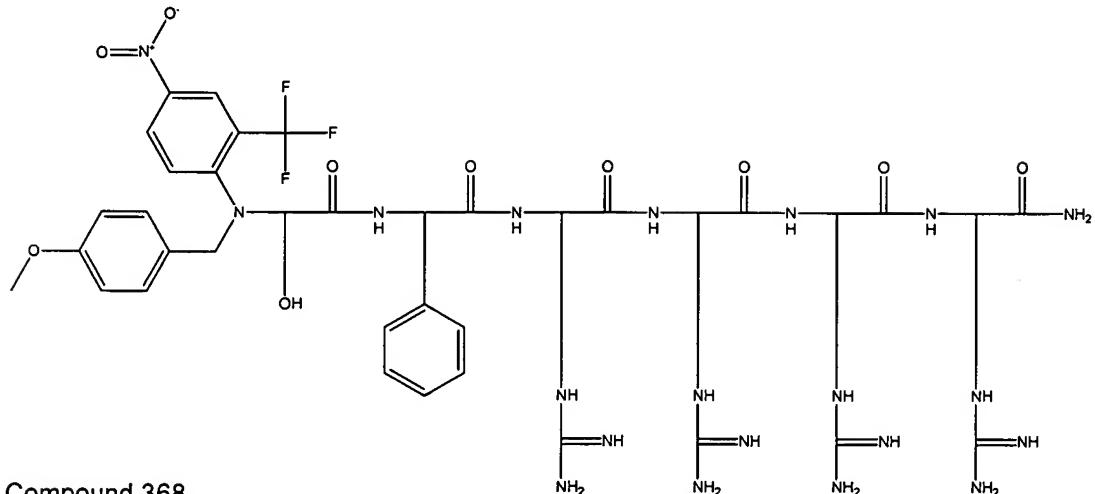


Compound 366

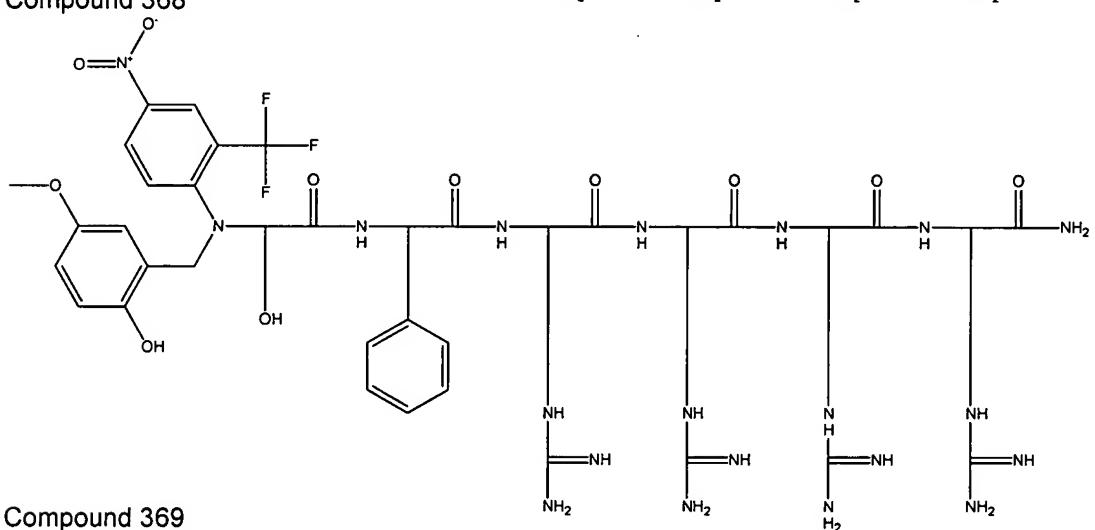


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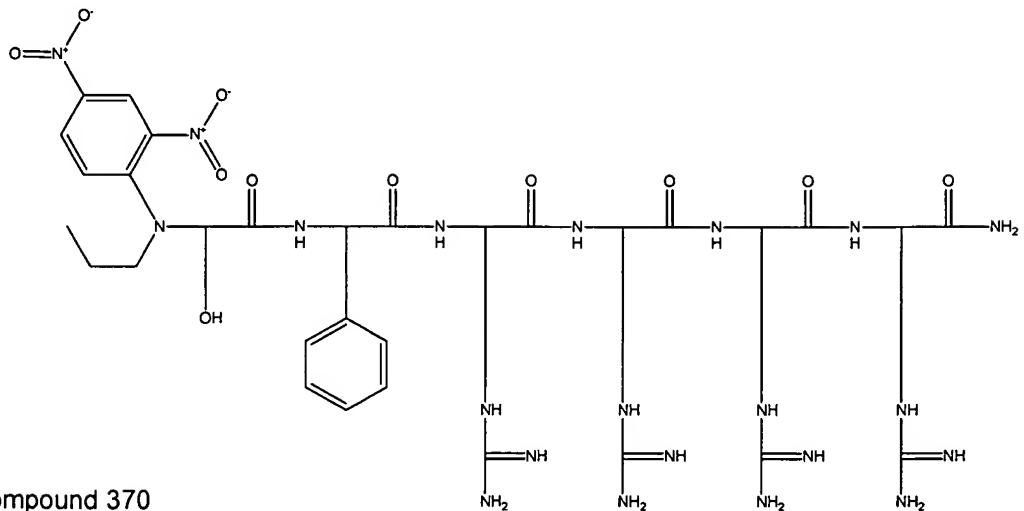


Compound 368

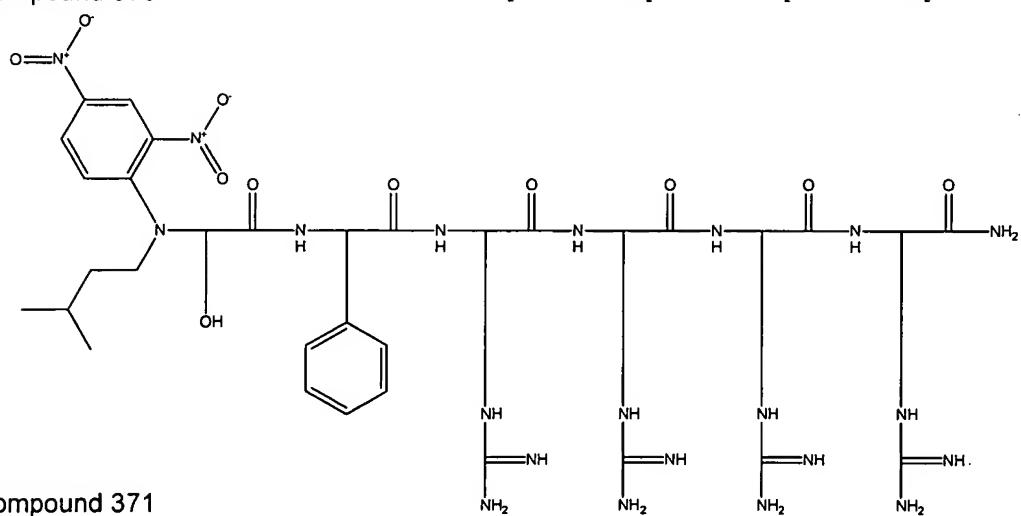


Compound 369

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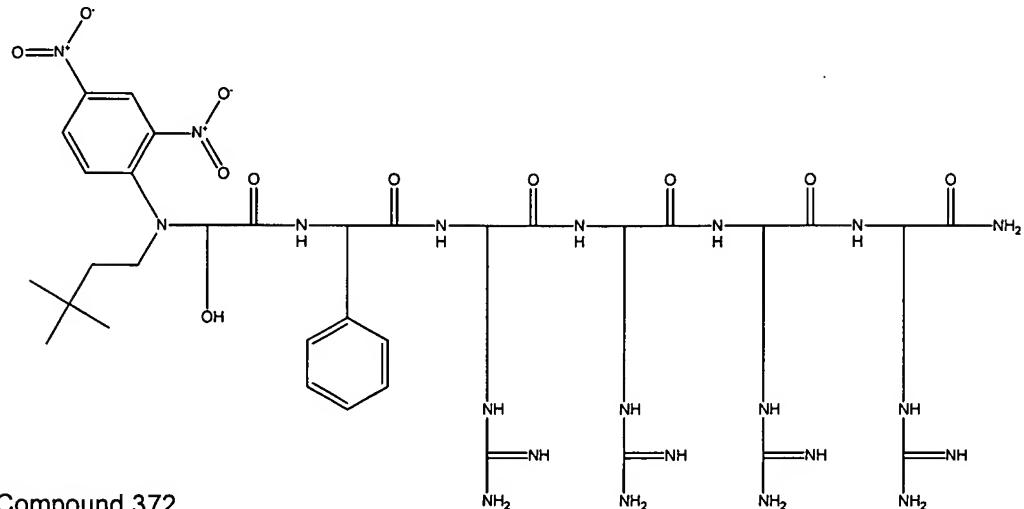


Compound 370

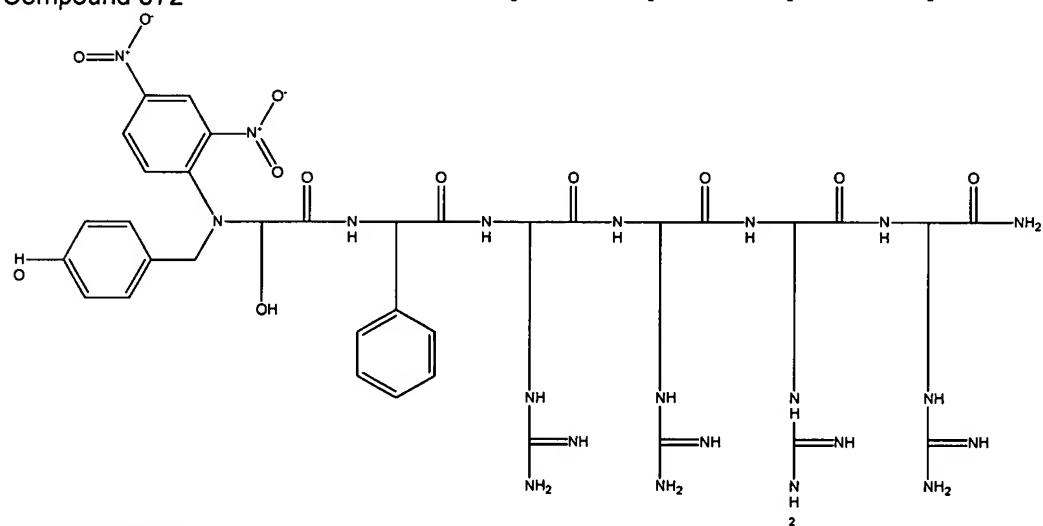


Compound 371

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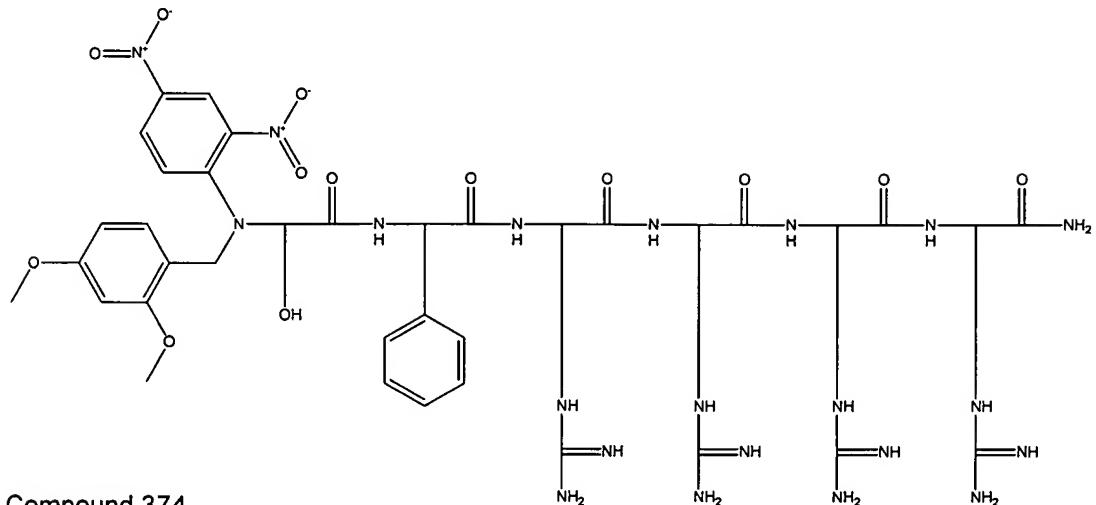


Compound 372

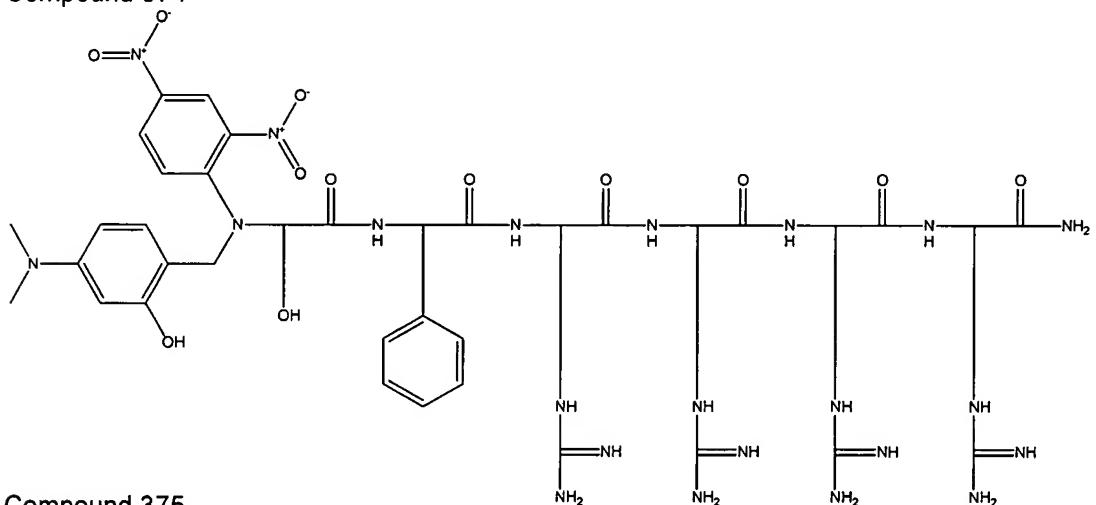


Compound 373

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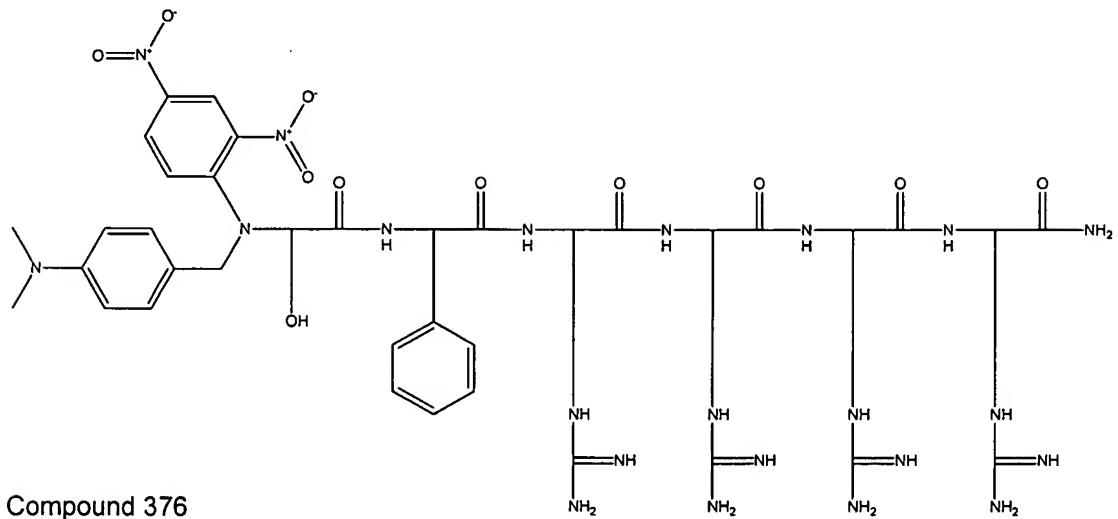


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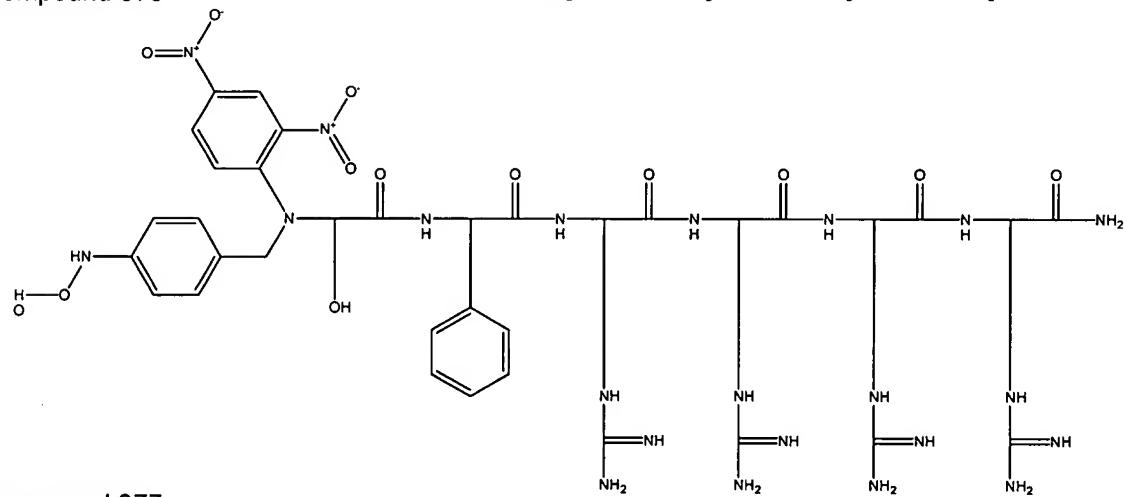


Compound 375

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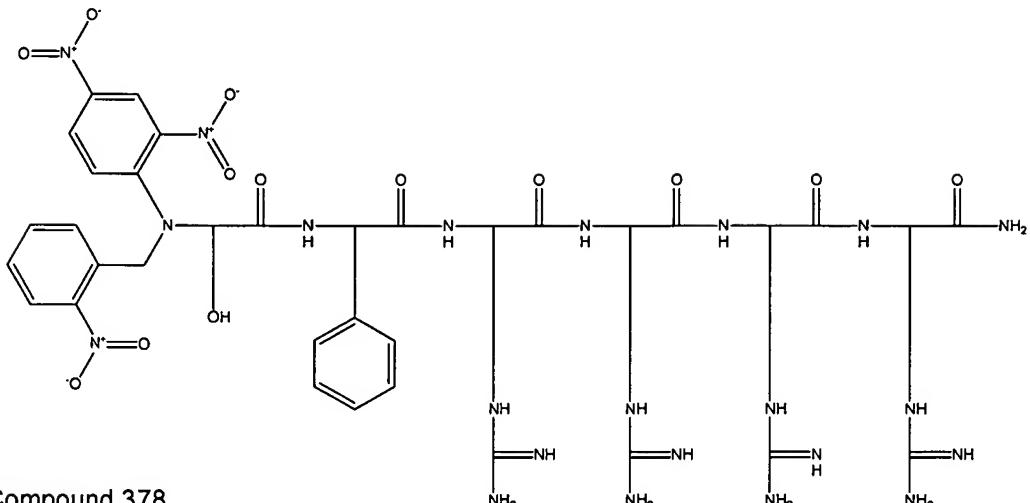


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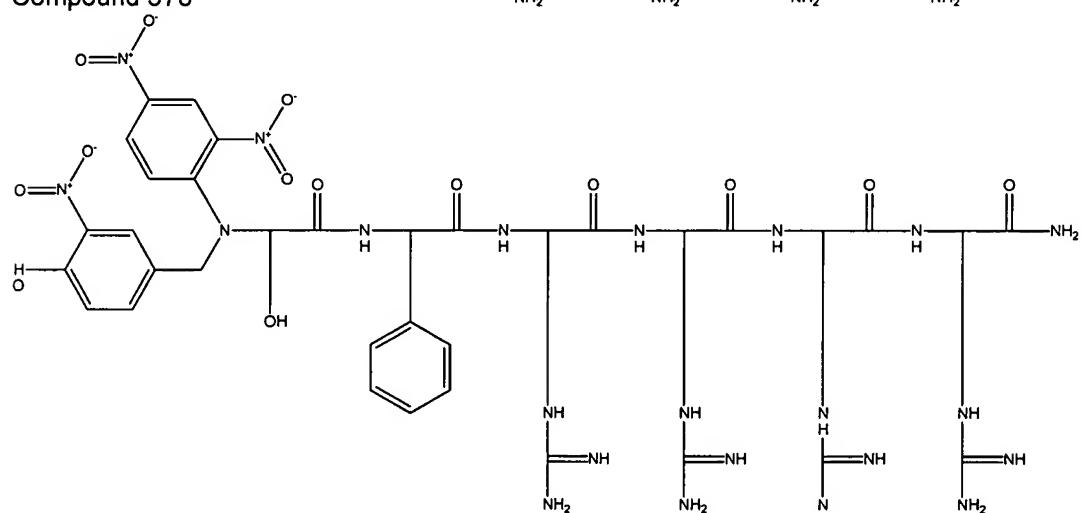


Compound 377

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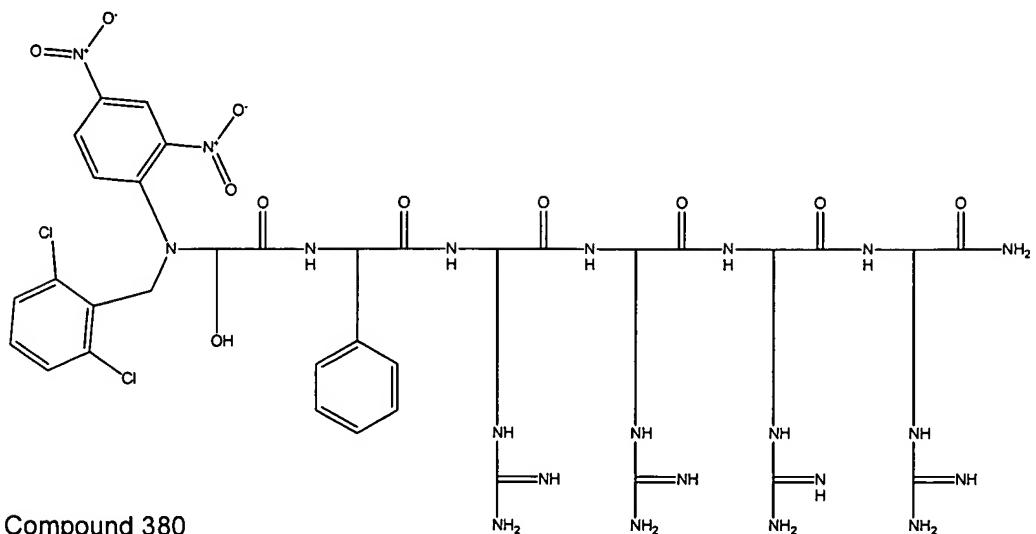


Compound 378

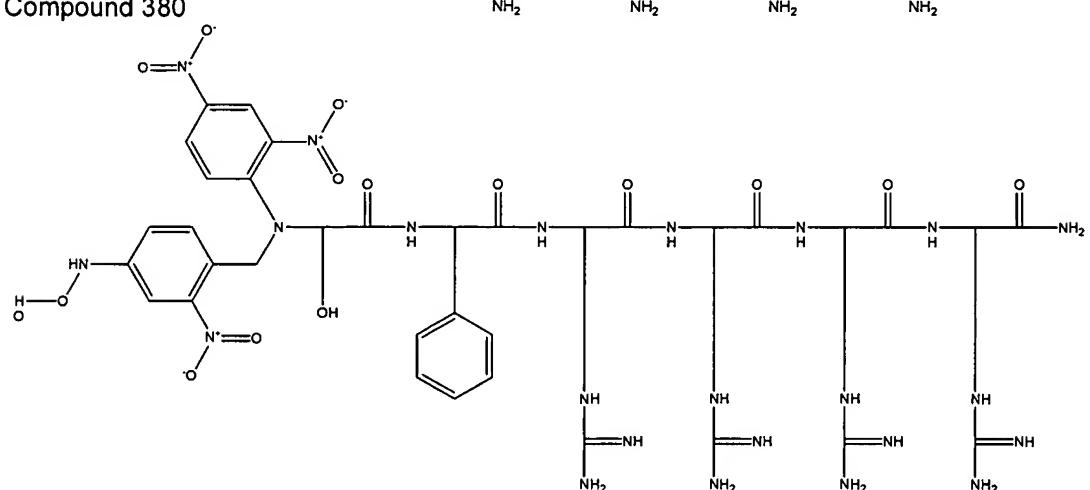


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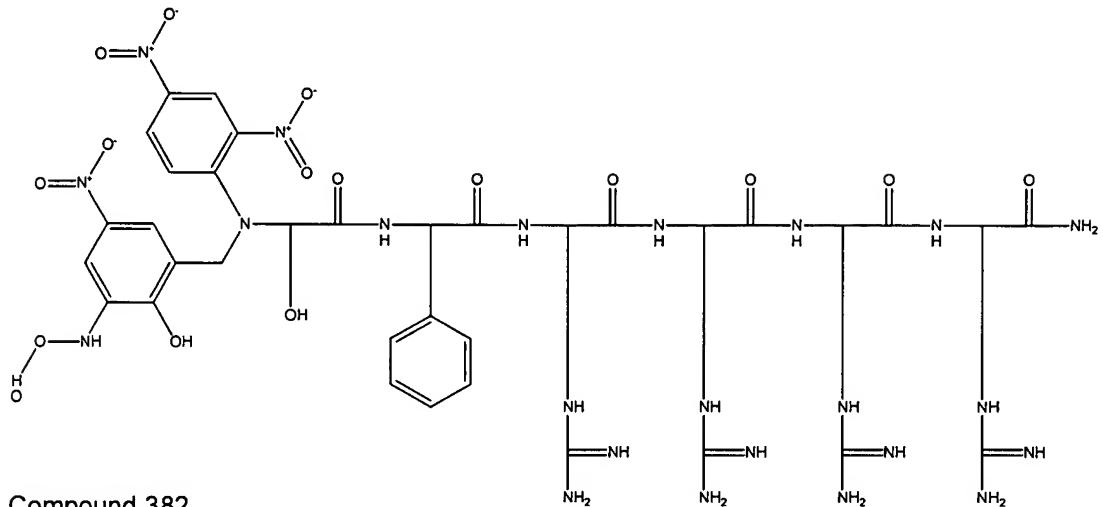


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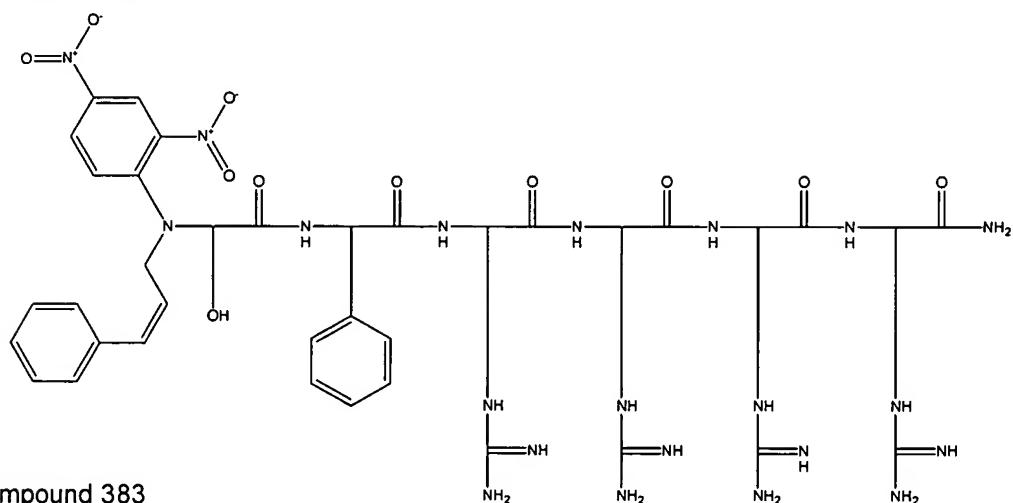


Compound 381

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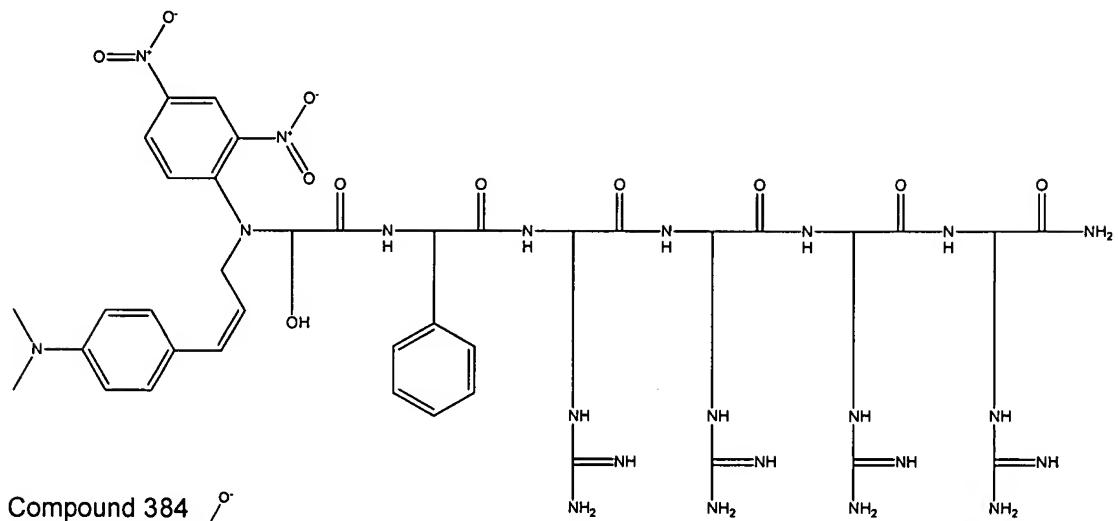


Compound 382

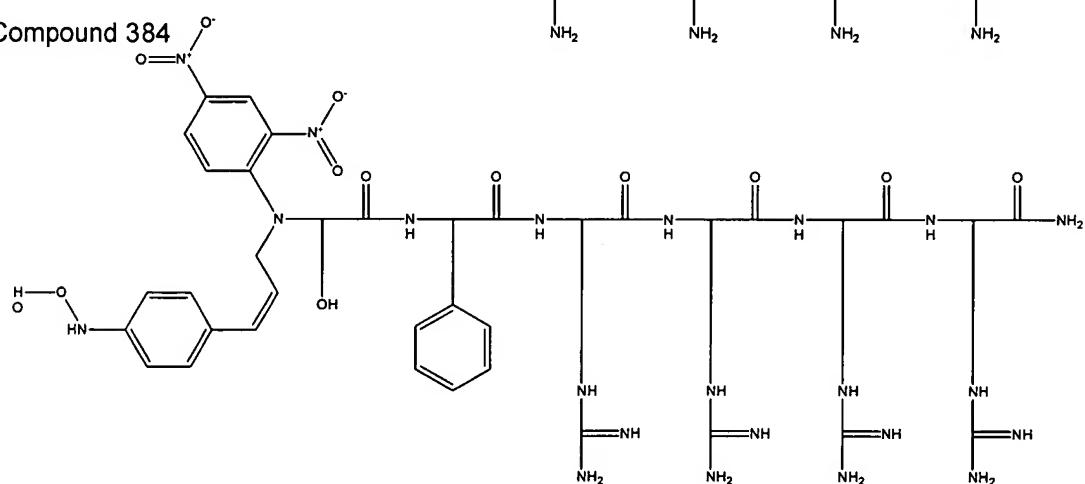


Compound 383

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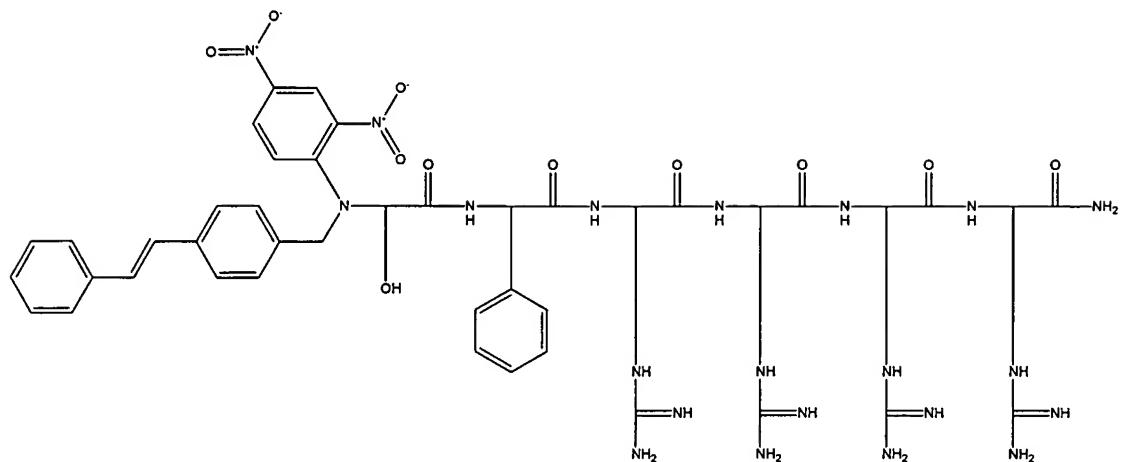


Compound 384

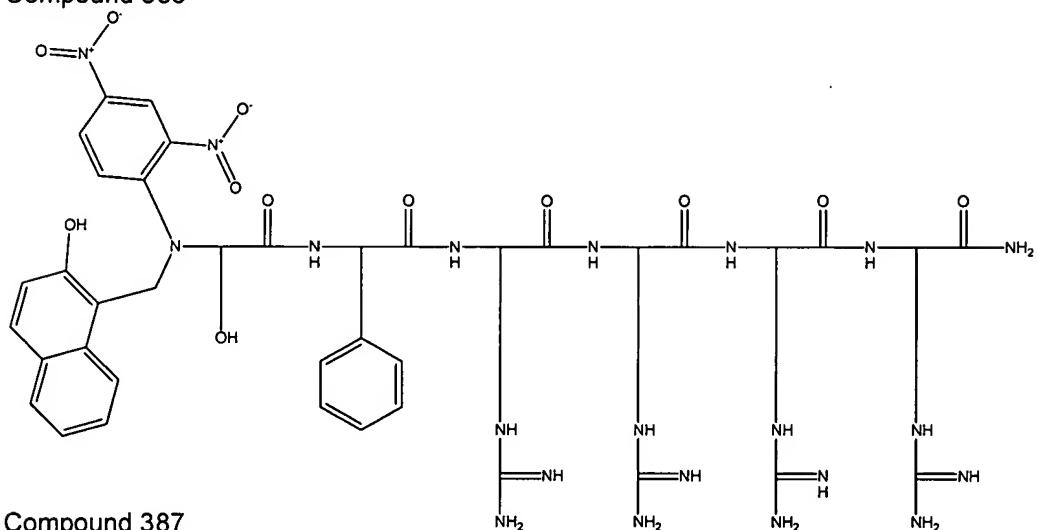


Compound 385

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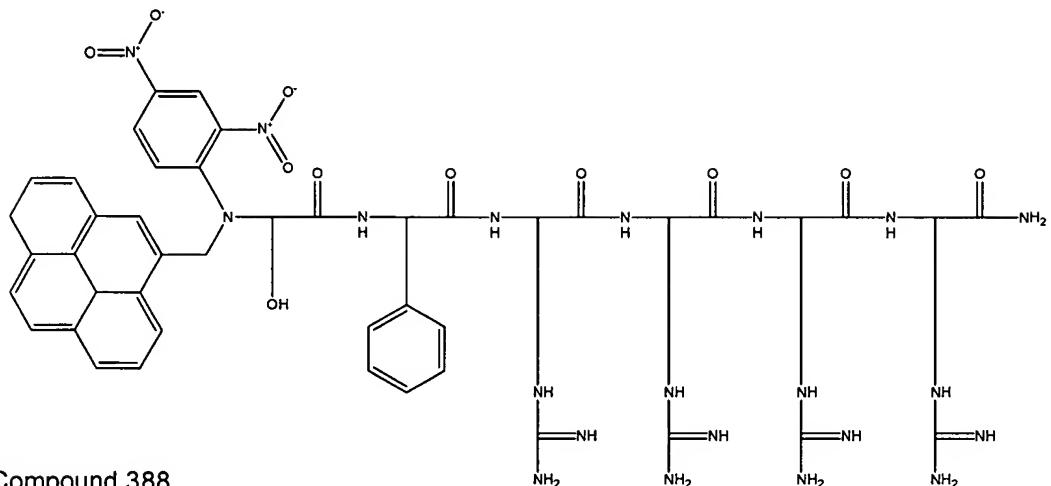


Compound 386

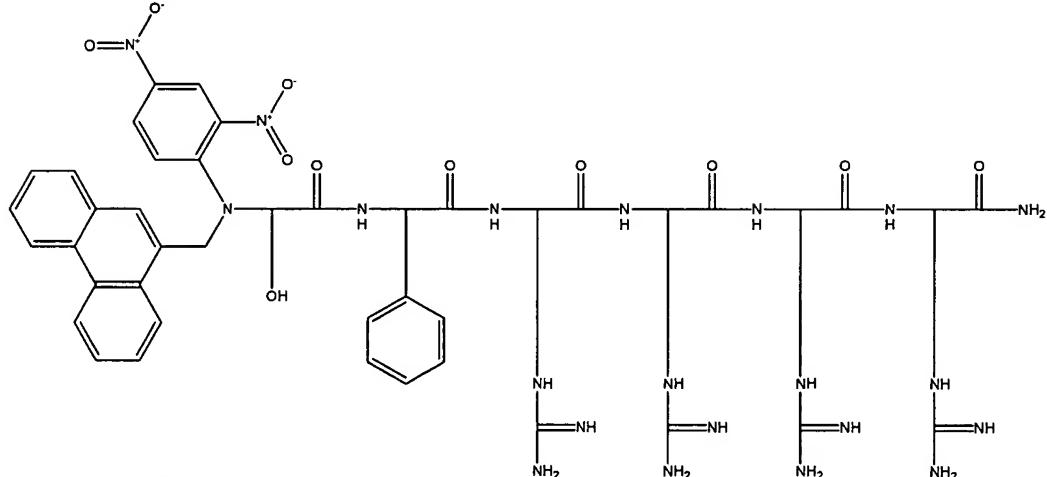


Compound 387

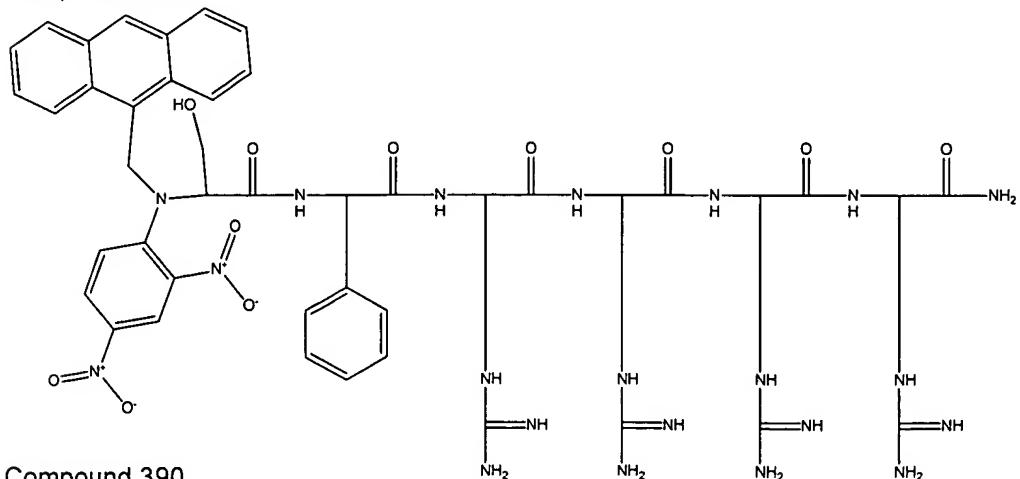
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Compound 388

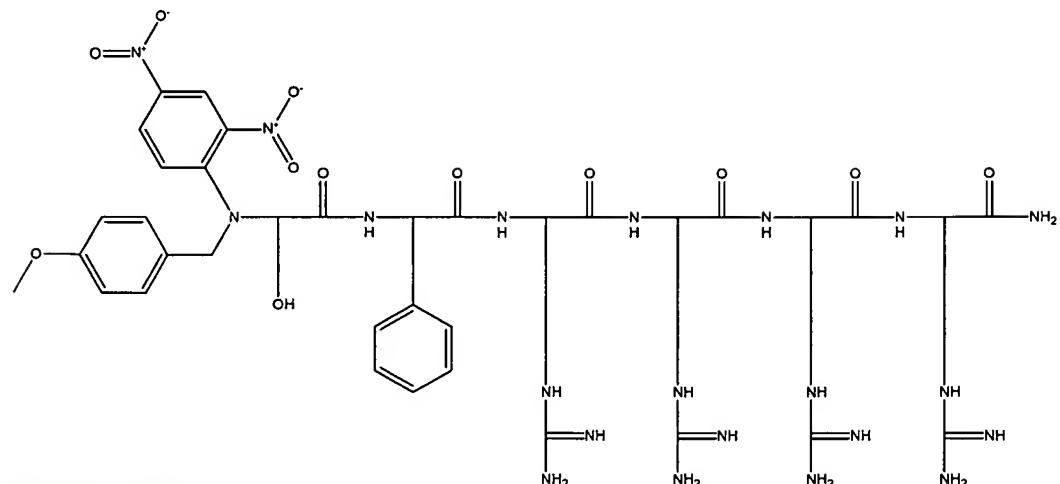


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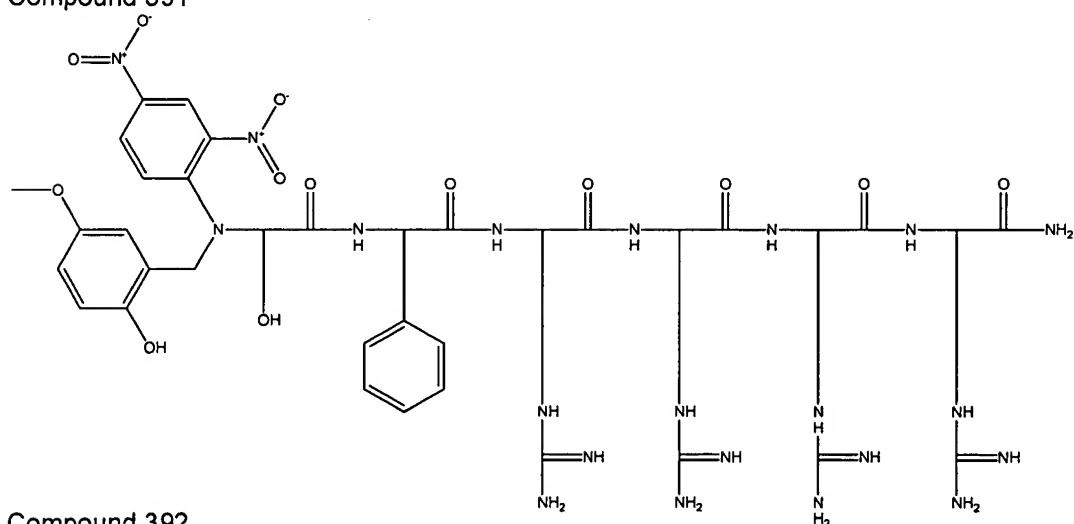


Compound 390

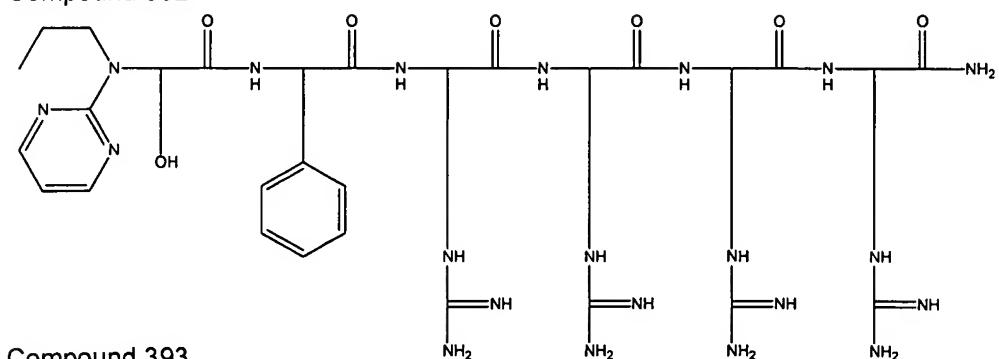
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Compound 391

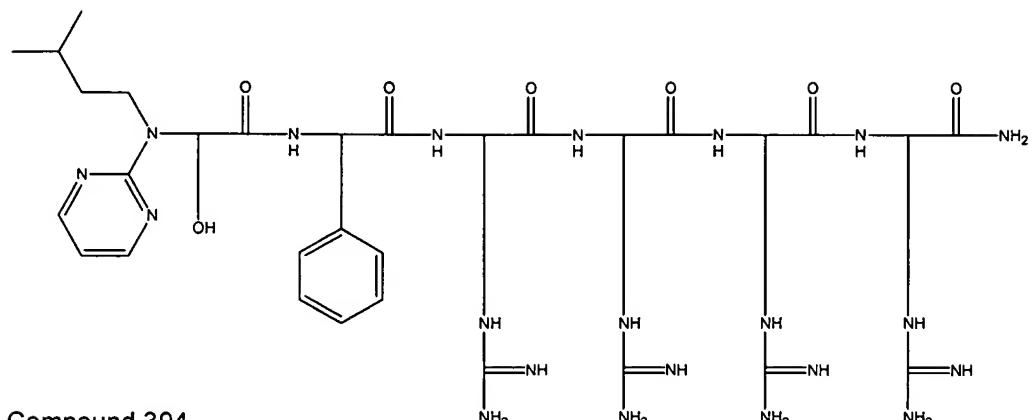


Compound 392

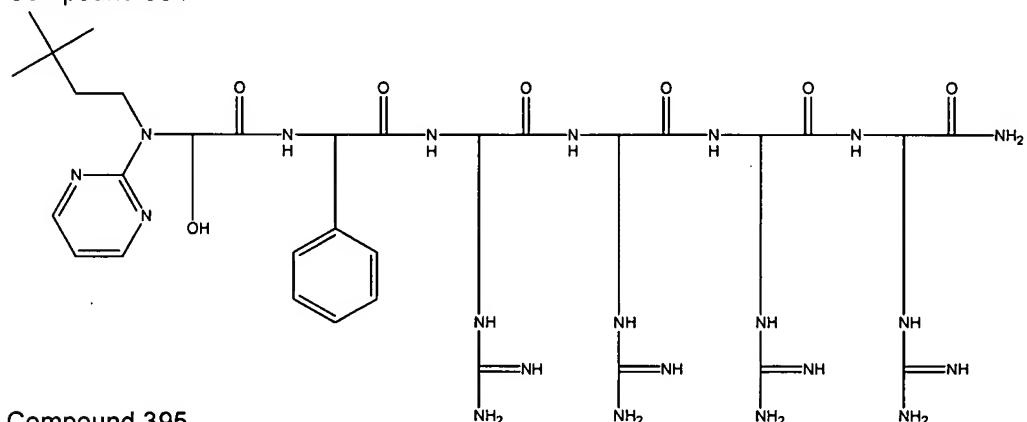


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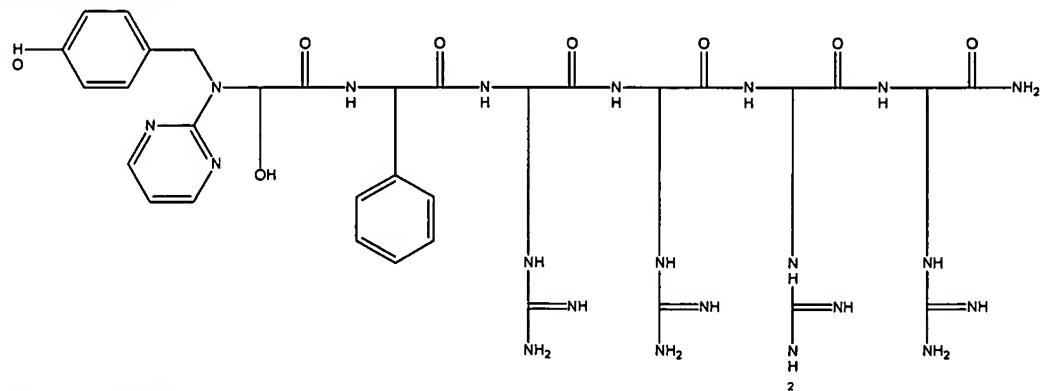
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Compound 394

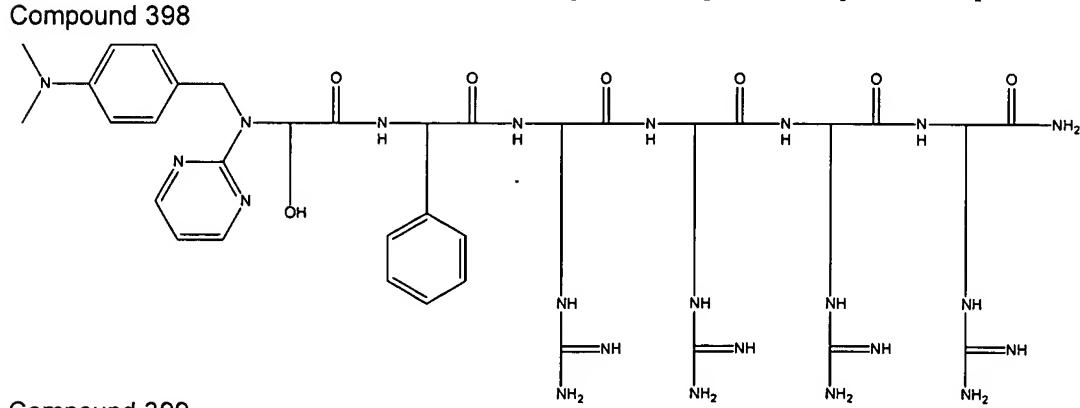
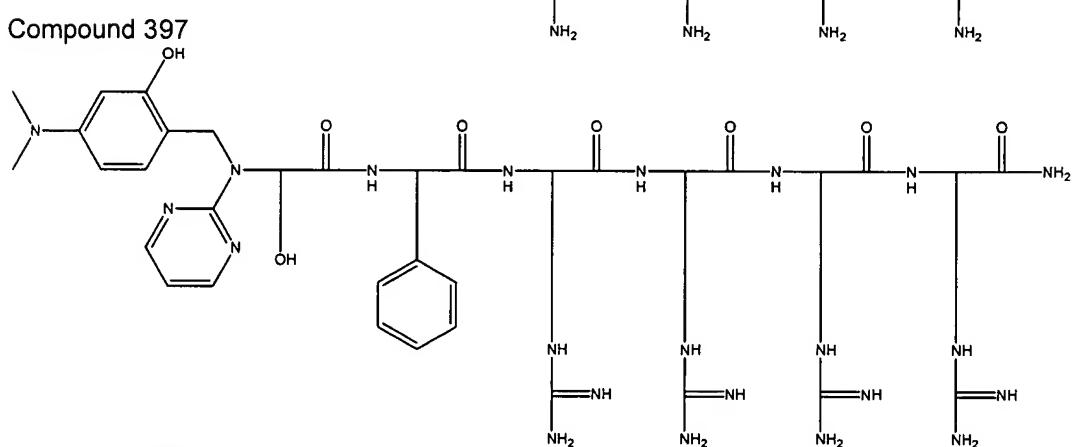
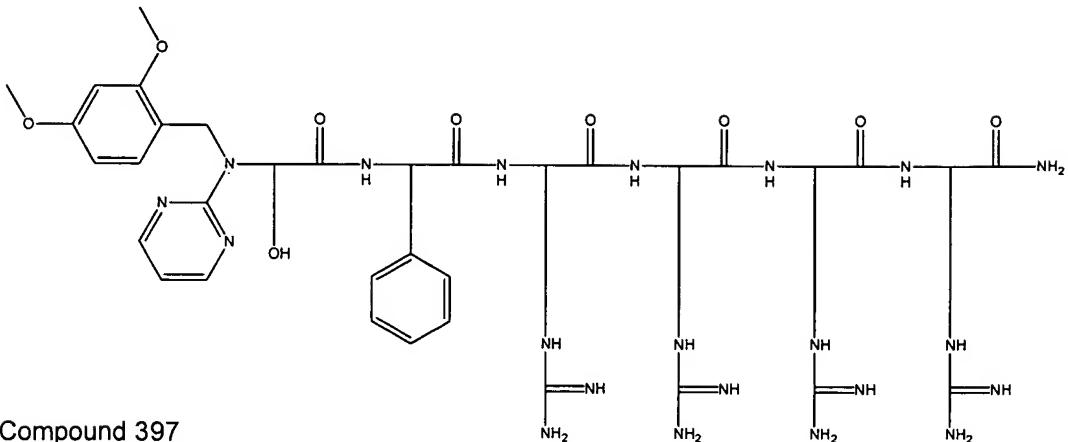


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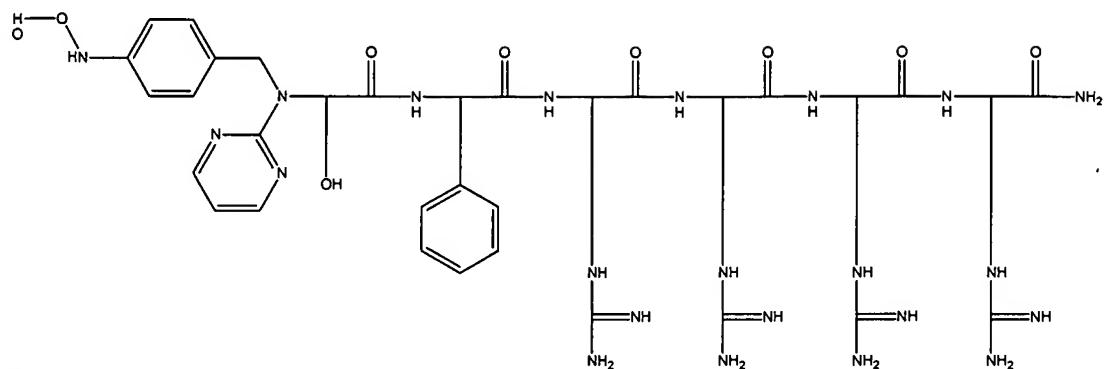


Compound 396

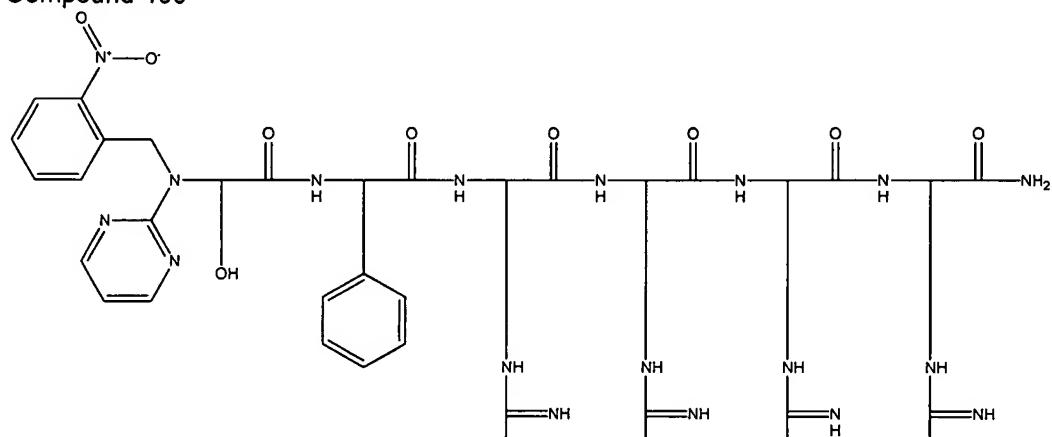
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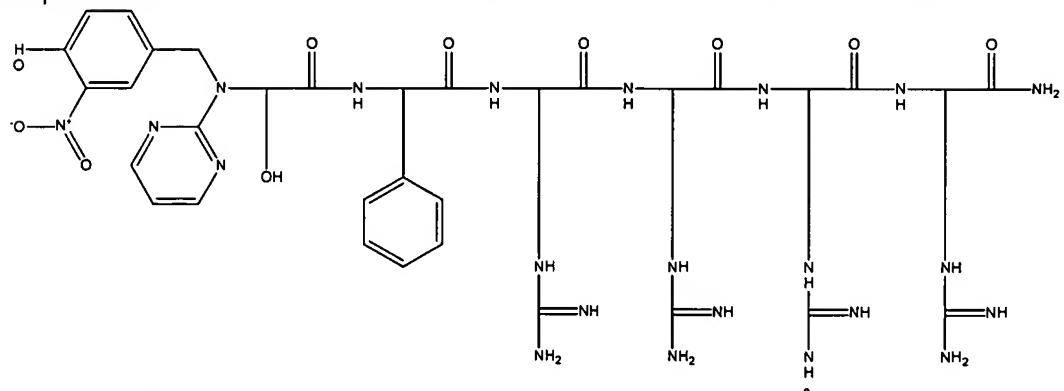
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Compound 400

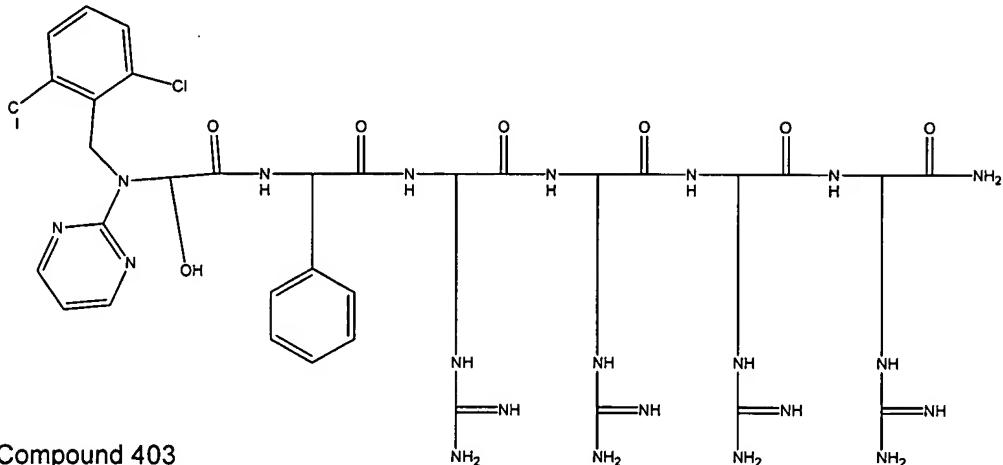


Compound 401

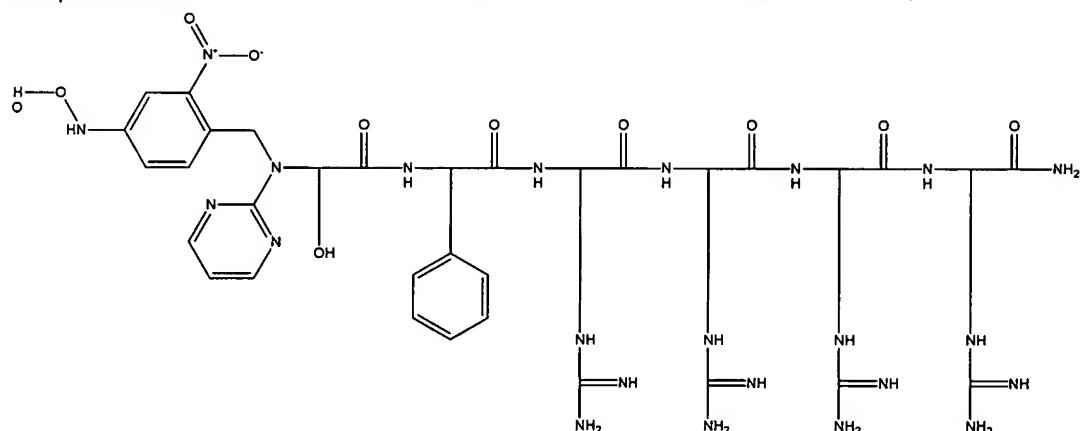


Compound 402

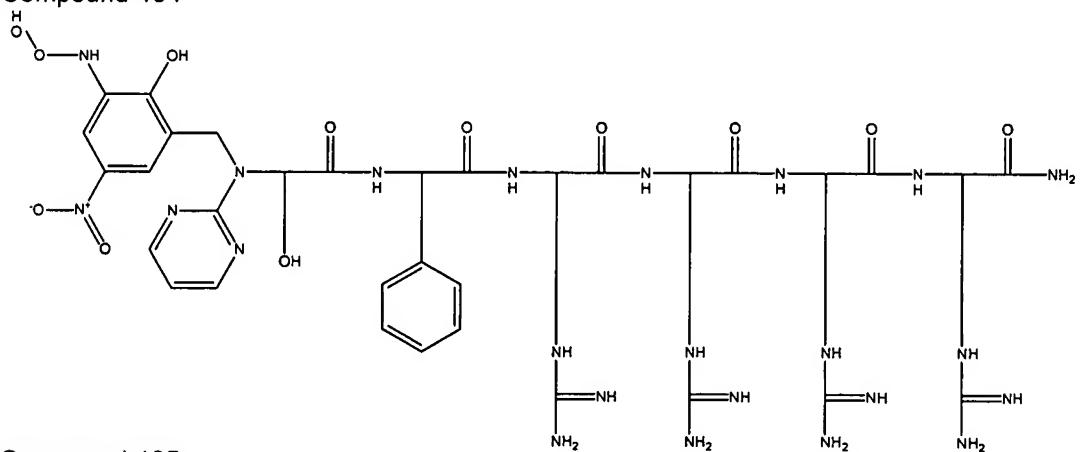
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Compound 403

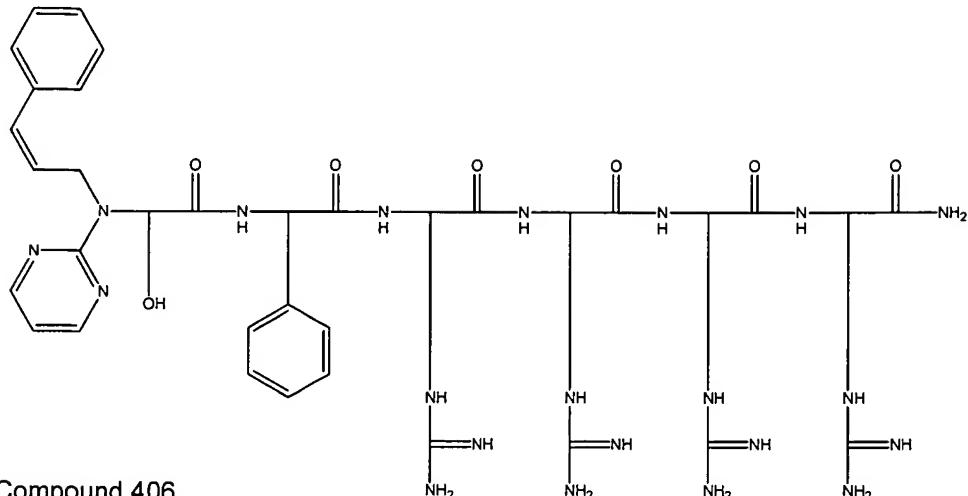


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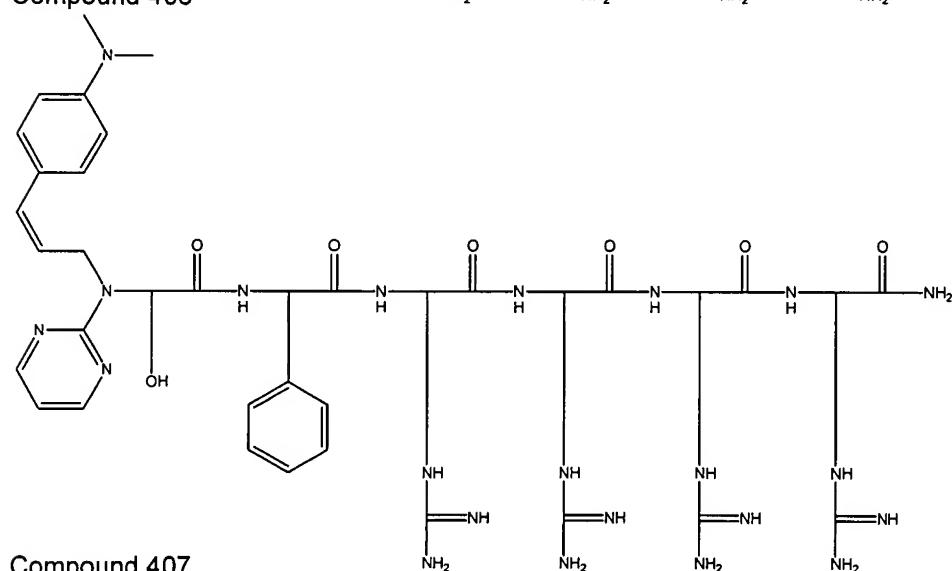


Compound 405

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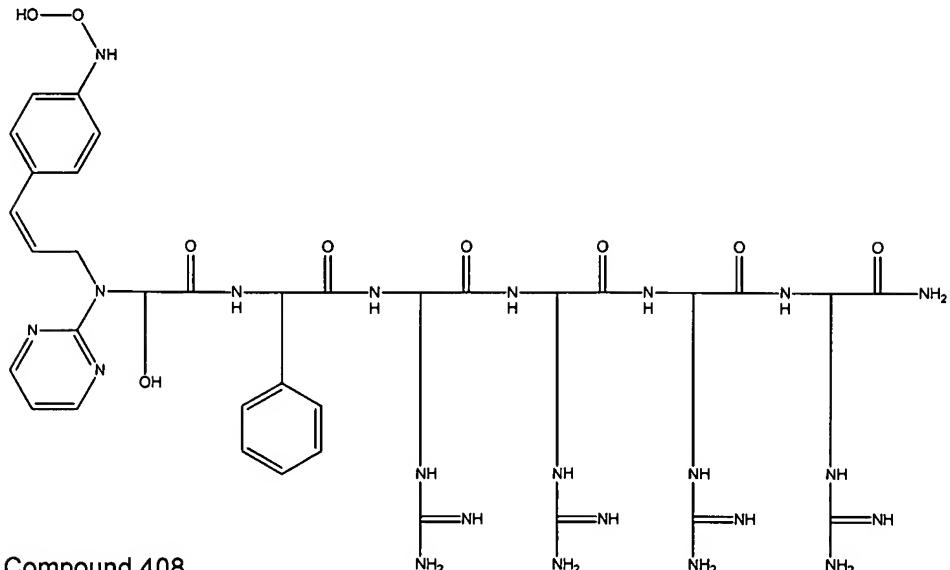


Compound 406

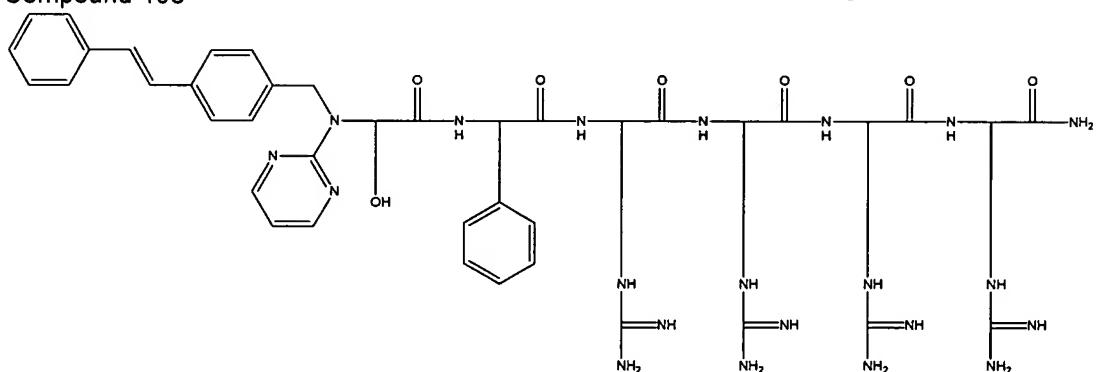


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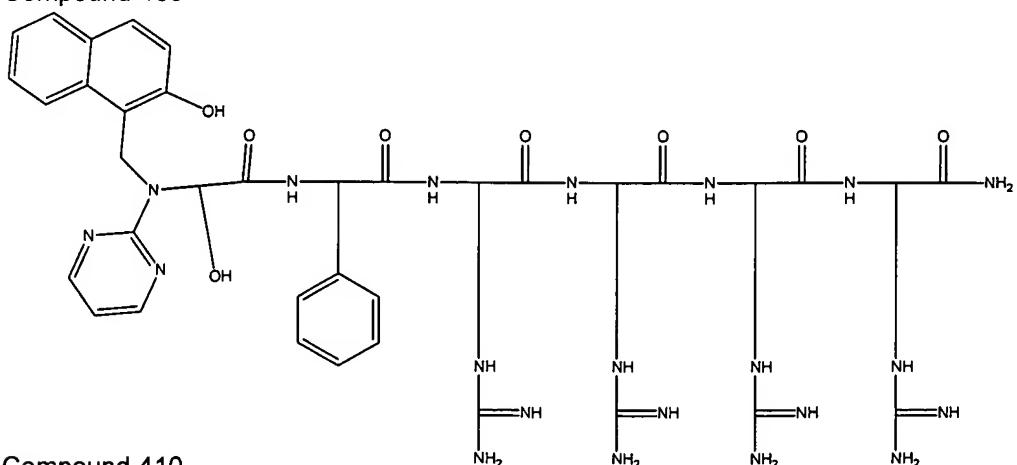
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Compound 408

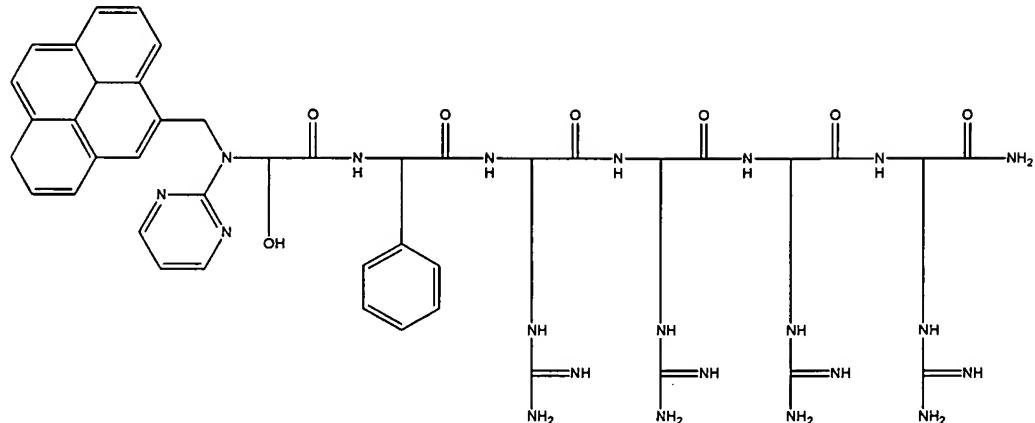


Compound 409

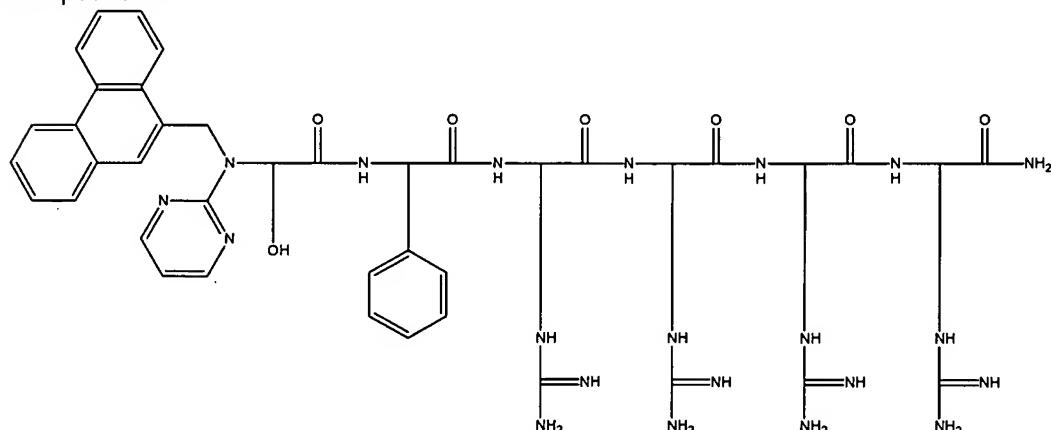


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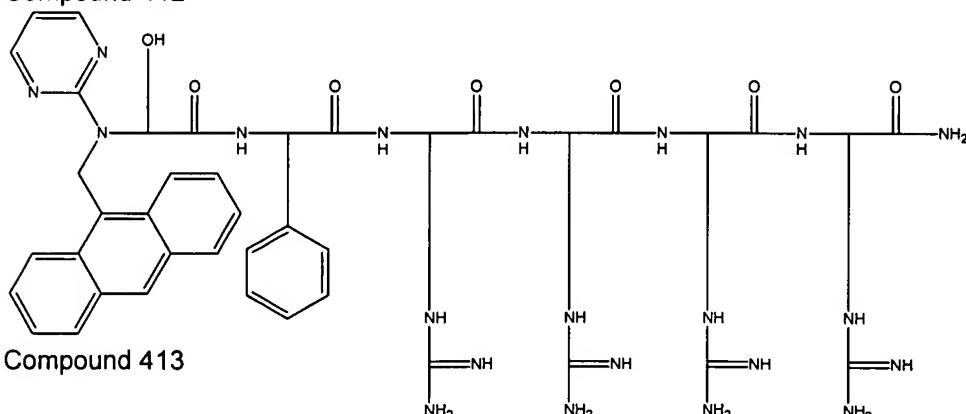
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Compound 411

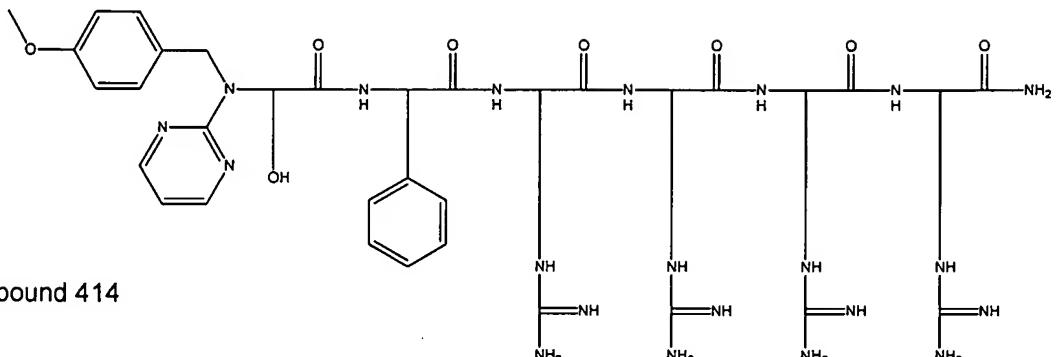


Compound 412

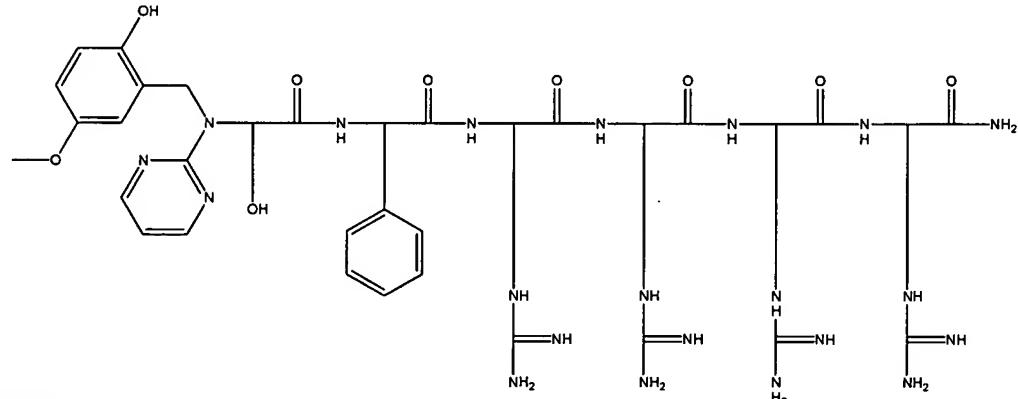


Compound 413

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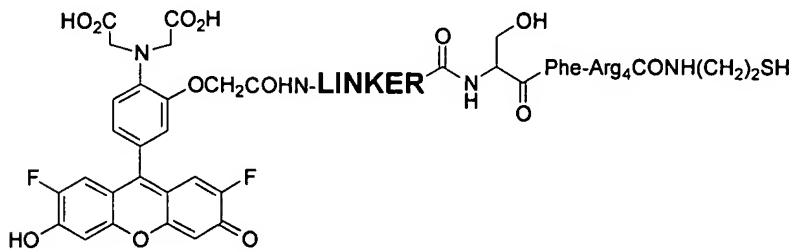


and



Compound 415

89. (Original) A chemical compound having the structure:



wherein the LINKER is selected from the group consisting of the following:

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90. (Original) A chemical compound having the structure:
fluorophore-LINKER-X-FRRRRK-amide (SEQ ID NO:3);
wherein F is phenylalanine; K is lysine; R is arginine; and X is serine, threonine, or tyrosine.

91. (Original) The chemical compound of claim 90, wherein the fluorophore is a 7-nitrobenz-2-oxa-1,3-diazole derivative.

92. (Withdrawn) The chemical compound of claim 90, wherein the fluorophore is a fluorescein derivative.

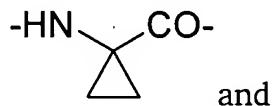
93. (Withdrawn) The chemical compound of claim 90, wherein the fluorophore is selected from the group consisting of a dansyl derivative, an acridine derivative, an Alexa Fluor derivative, a BODIPY derivative, an Oregon Green derivative, a Rhodamine Green derivative, a Rhodamine Red-X derivative, a Texas Red derivative, a Cascade Blue derivative, a Cascade Yellow derivative, a Marina Blue derivative, a Pacific Blue derivative, an AMCA-X derivative, and a coumarin derivative.

94. (Withdrawn) The chemical compound of claim 90, wherein the linker is a metal chelating linker.

95. (Original) The chemical compound of claim 90, wherein the linker is selected from the group consisting of a carboxamide linker, an aminobenzoic acid linker, a sulfonamide linker, a urea linker, a thiourea linker, an ester linker, a thioester linker, an alkylamine linker, an arylamine linker, an ether linker, and a thioether linker.

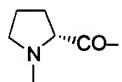
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96. (Withdrawn) The chemical compound of claim 90, wherein the linker is selected from the group consisting of N-methyl glycine, L-proline, D-proline,

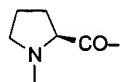


CC1(C(=O)N)C=CC=C1

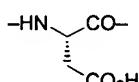
97. (Original) The chemical compound of claim 90, wherein the linker is selected from the group consisting of the following:



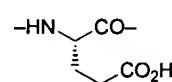
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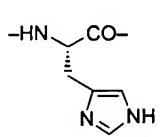
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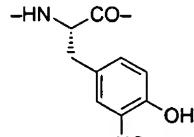
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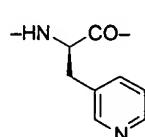
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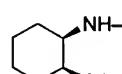
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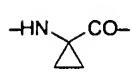
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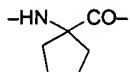
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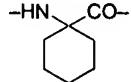
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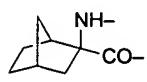
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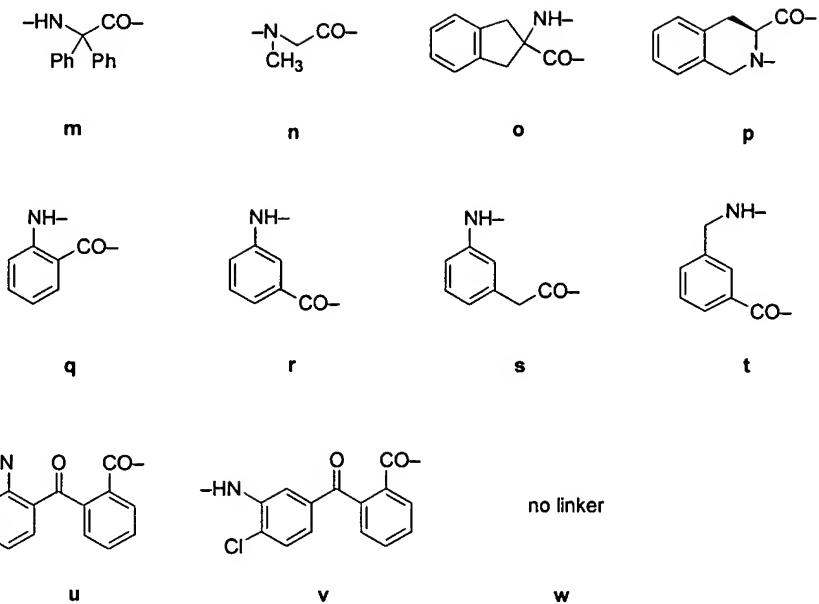


k



1

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98. (Original) The chemical compound of claim 90, wherein the chemical compound is a substrate for a protein kinase.

99. (Original) The chemical compound of claim 98, wherein the chemical compound is specific for protein kinase C.

100. (Original) The chemical compound of claim 99, wherein the chemical compound is specific for isoforms α , β , and γ of protein kinase C.

101. (Withdrawn) The chemical compound of claim 98, the chemical compound is specific for protein kinase A, protein kinase B, protein kinase D, protein kinase G, Ca⁺/calmodulin-dependent protein kinase, mitogen-activated protein kinase, protein kinase mos, protein kinase raf, protein tyrosine kinase, tyrosine kinase abl, tyrosine kinase

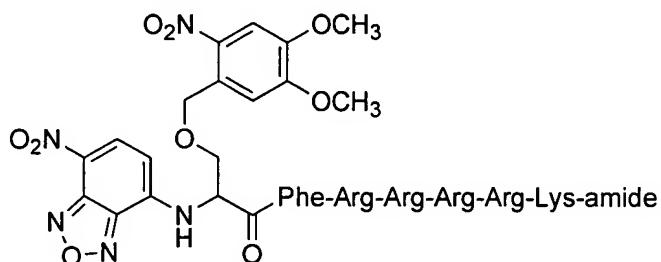
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src, tyrosine kinase yes, tyrosine kinase fps, tyrosine kinase met, cyclin-dependent protein kinase, or cdc2 kinase.

102. (Original) The chemical compound of claim 90, wherein the chemical compound further comprises a carbohydrate, a lipid or a nucleic acid.

103-121. (Canceled)

122. (Original) A chemical compound having the structure



123. (Previously presented) A composition comprising a chemical compound of claim 89, and a carrier.

124-126. (Canceled)

127. (Previously presented) The substrate of claim 60, wherein the substrate comprises a metal ion chelator.

128. (Original) The substrate of claim 127, wherein the metal ion is a magnesium ion or a calcium ion.

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129. (Previously presented) The chemical compound of claim 90, wherein a metal ion chelator induces a change in fluorescence intensity.

130. (Original) The chemical compound of claim 129, wherein the metal ion is a magnesium ion or a calcium ion.

131. (Original) The chemical compound of claim 129, wherein the change in fluorescence intensity is at least a 20% change in fluorescence intensity.

132. (Canceled)

133. (Previously presented) The chemical compound of claim 90, wherein the linker comprises a turn to position the fluorophore in a location closer to the serine, the threonine or the tyrosine than the location the fluorophore would occupy in the absence of a turn in the linker.

134. (Previously presented) The chemical compound of claim 89, wherein the linker comprises a turn to position the fluorophore in a location closer to the terminal serine, the terminal threonine or the terminal tyrosine than the location the fluorophore would occupy in the absence of a turn in the linker.

135-136. (Canceled)

137. (Previously presented) The composition of claim 123, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically

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acceptable carrier.

138. (Previously presented) A composition comprising the substrate of claim 49, and a carrier.

139. (Previously presented) The composition of claim 138, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

140. (Previously presented) A composition comprising the compound of claim 88, and a carrier.

141. (Previously presented) The composition of claim 140, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

142. (Previously presented) A composition comprising the compound of claim 90, and a carrier.

143. (Previously presented) The composition of claim 142, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

144-145. (Canceled)

146. (Previously presented) A composition comprising the compound of claim

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122, and a carrier.

147. (Previously presented) The composition of claim 146, wherein the composition is a pharmaceutical composition and the carrier is a pharmaceutically acceptable carrier.

148. (New) The substrate of claim 56, wherein a photolabile side chain is attached to the serine, the threonine, or the tyrosine on the terminal end of the peptide, wherein the photolabile side chain blocks transfer of a phosphoryl group from adenosine triphosphate to a hydroxyl moiety of the serine, the threonine, or the tyrosine so that the substrate cannot be phosphorylated by a protein kinase until the photolabile side chain is removed from the substrate.